TPOL Hardware Fall 2019 Checkup

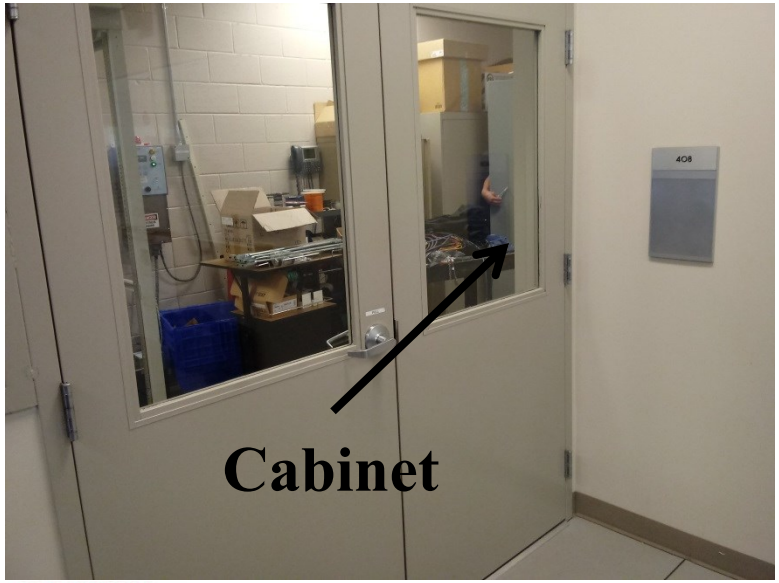
TPOL supplies

Nick found all of the TPOL supplies and consolidated the items in one location

Spares

- Three Swan preamp boxes
- Three functional filter boards (2 from ASU 1 from JLab)
- Two blank filter boards
- 1 blank board for distribution box

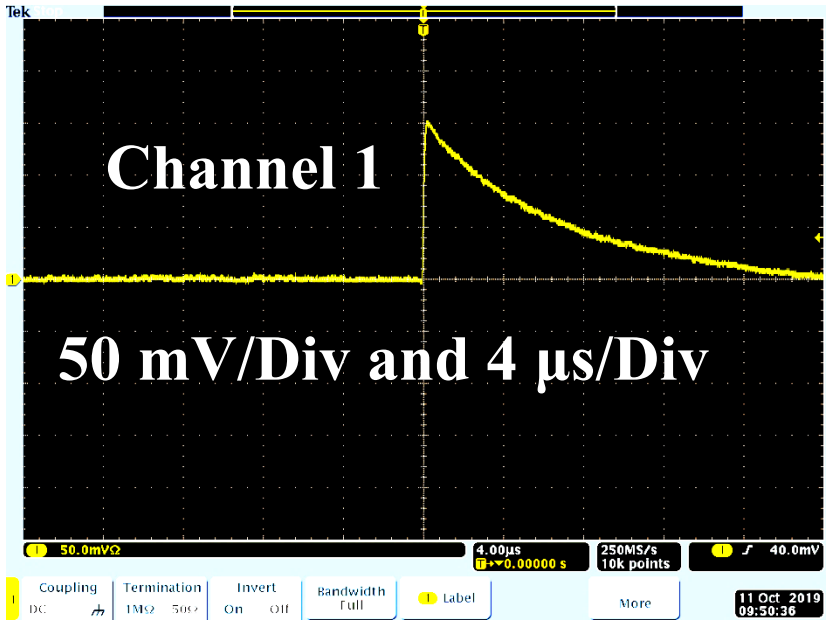
Location of TPOL supplies



Signal check

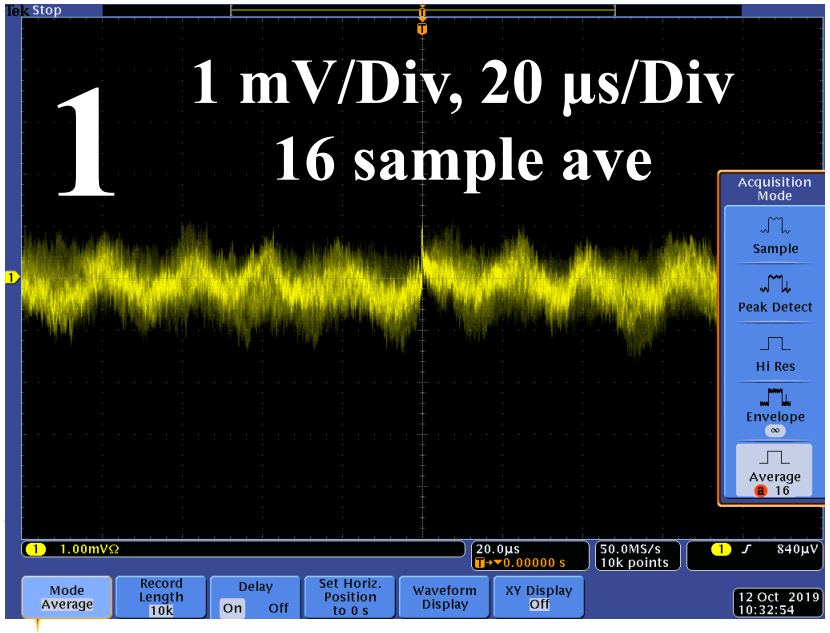
Checked each channel for signal

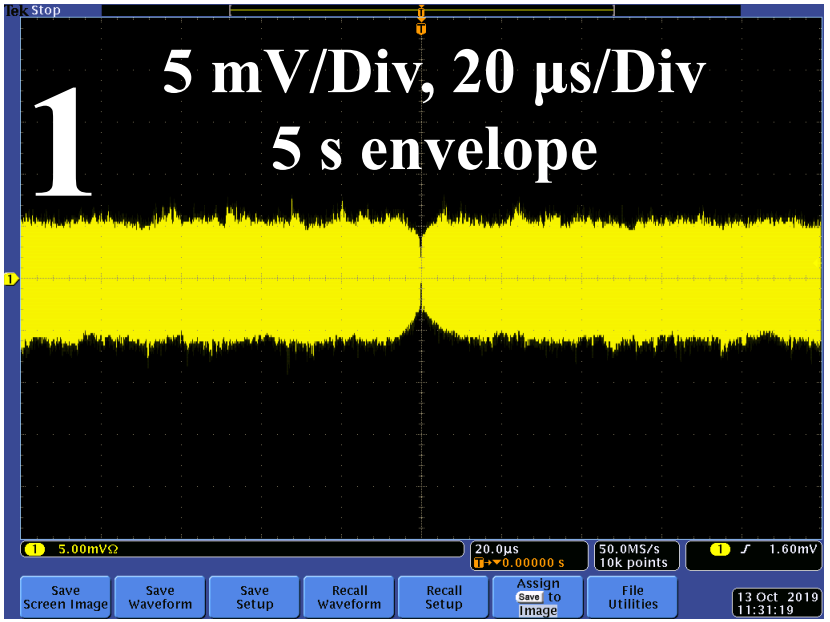
- Typical result shown below
- All channels included at end of this presentation



Baseline and noise check

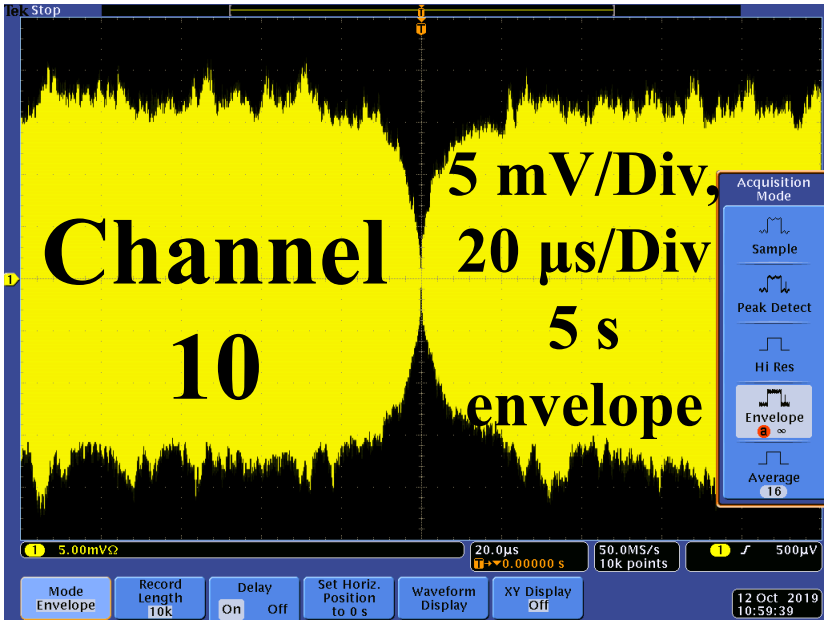
- Baseline fluctuation is typically a few mV and noise envelope about +/- 5 mV
- Typical example shown below (all at end of this presentation)
- Worst outliers shown on next slide



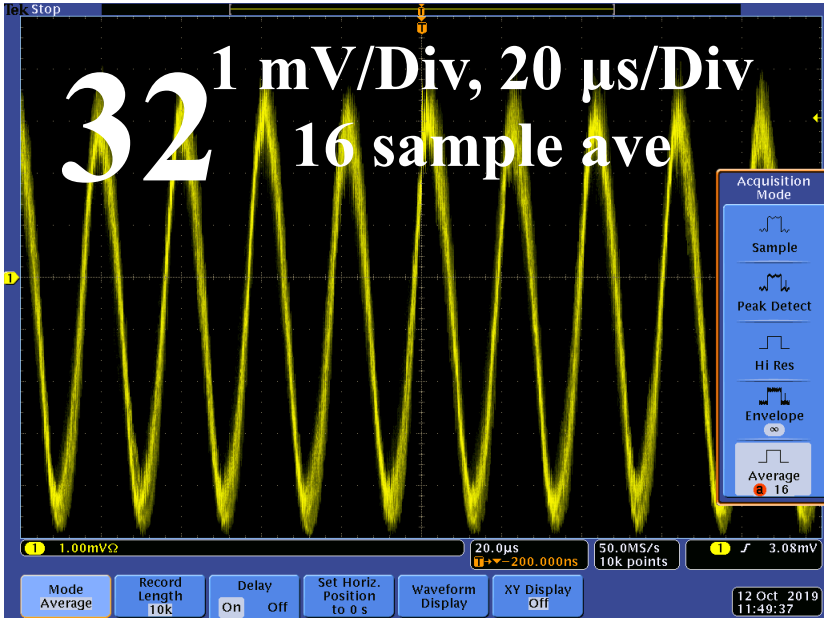


Baseline and noise check

- Channel 10 noise envelope is about twice the size as compared to a typical channel

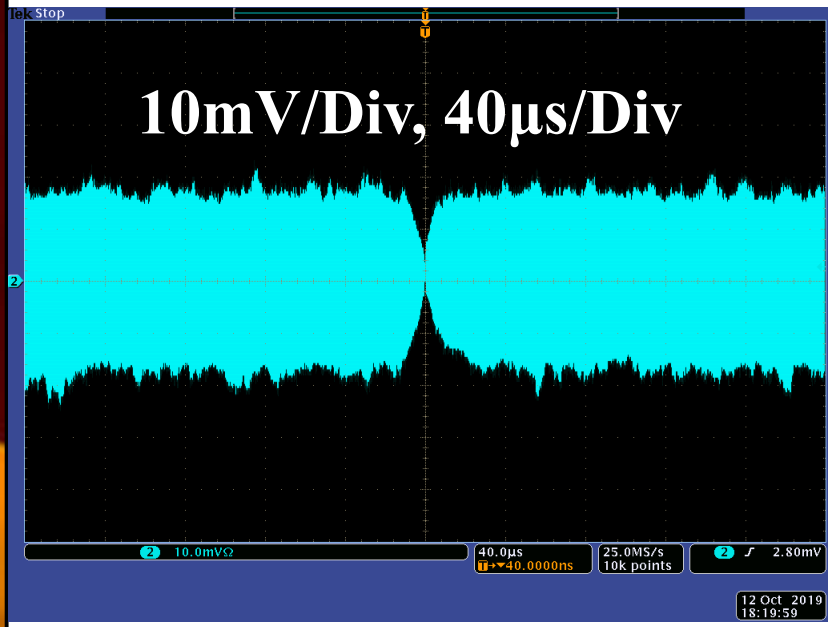


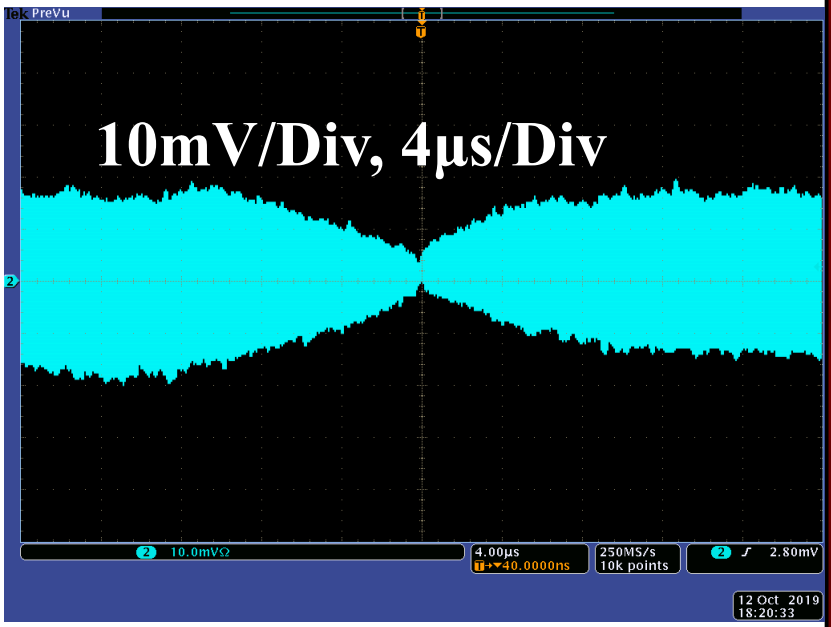
- Baseline for channel 32 is a very clear periodic fluctuation of about +/- 5 mV

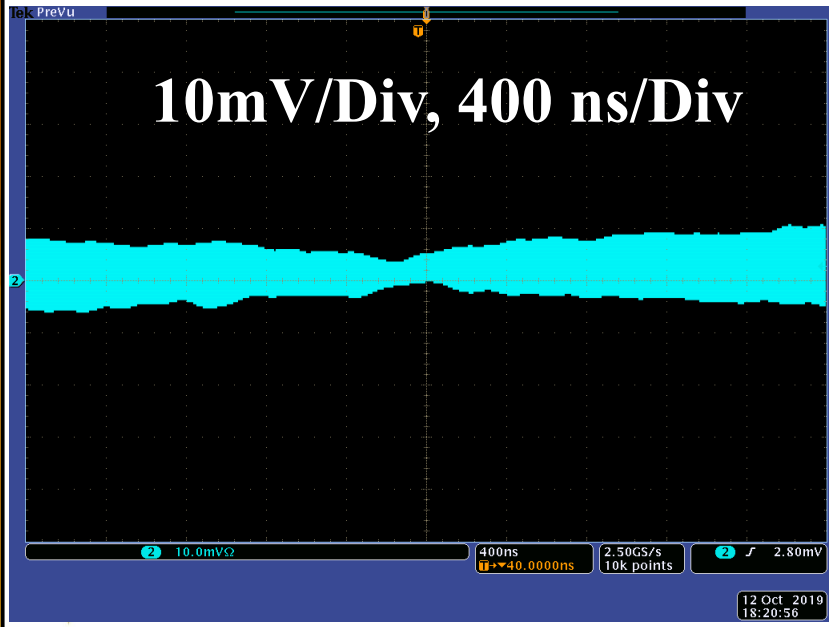


ASU

Noisy Channel 10, 5s envelope, 2.8mV trig

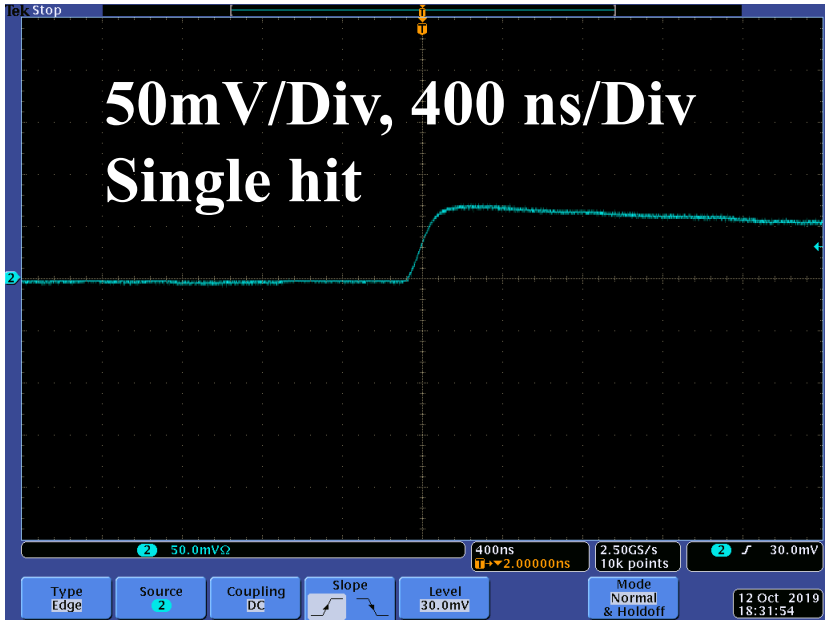


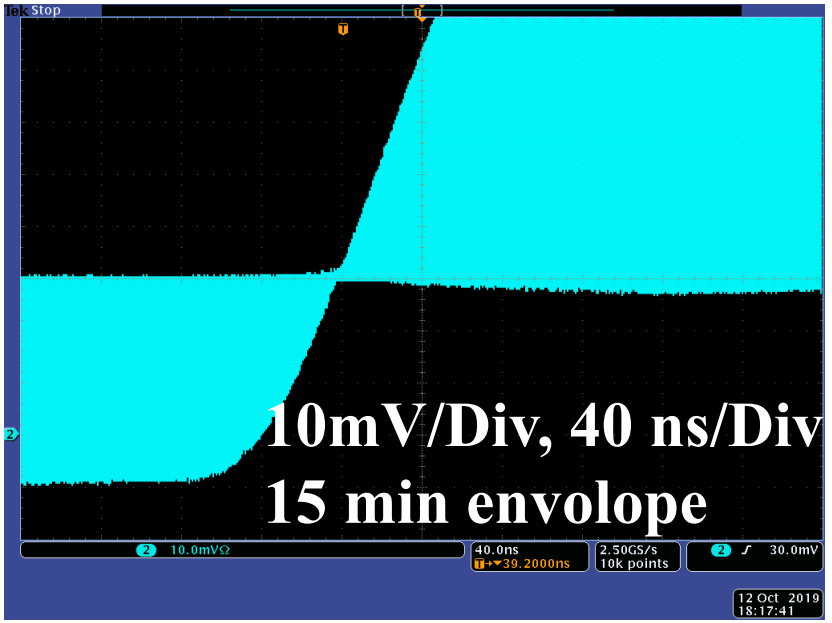




Zoom in on envelope shows that time structure is not very sharp (voltage versus time has low slope)

Noisy channel 10, 30 mV trigger





- Signal has sharp time structure

Trigger

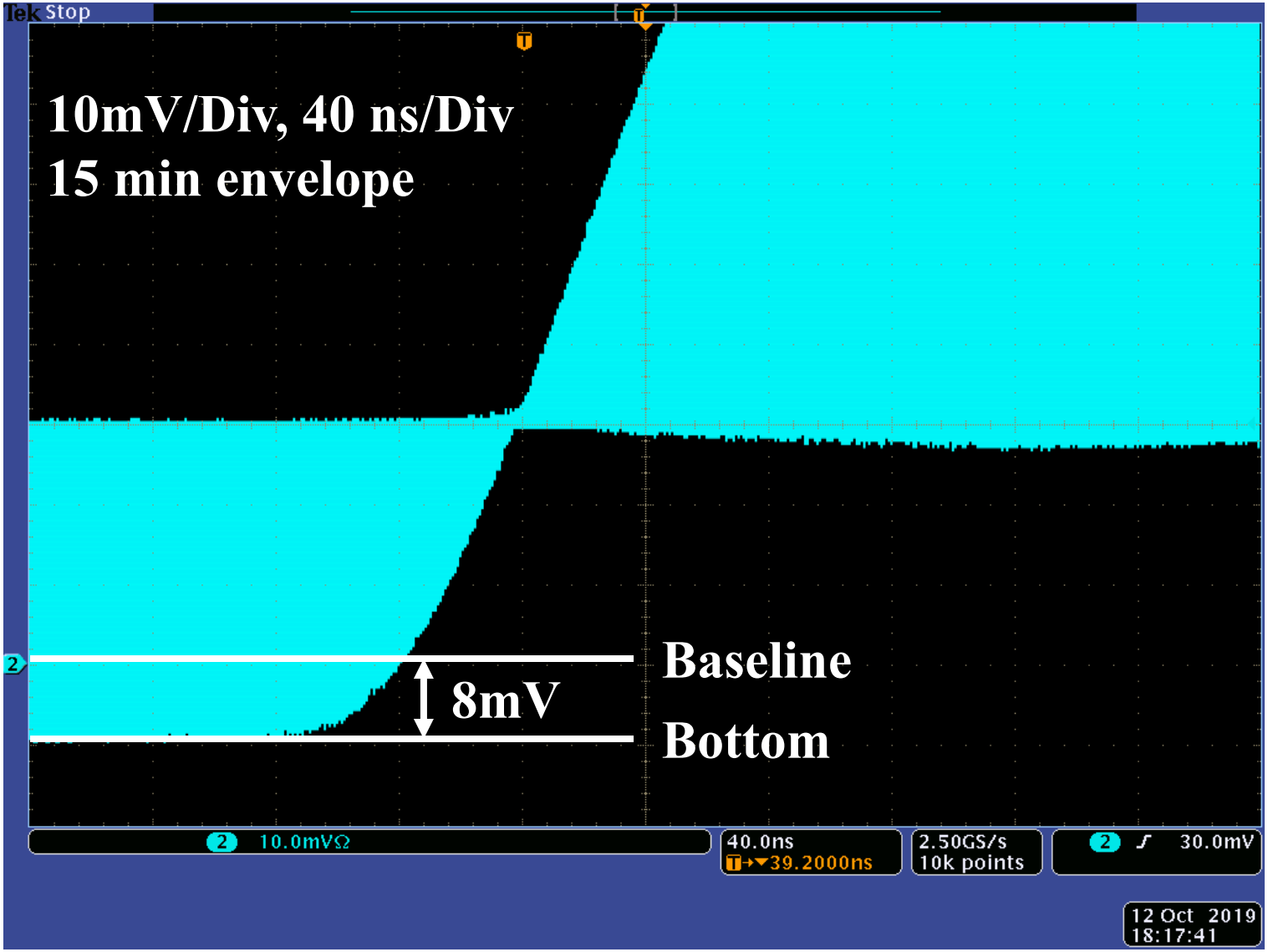
Conversions:

- 5.33 keV per mV
- 2.6 keV per FADC channel

A threshold of 240 keV implies 45 mV from bottom of signal to trigger

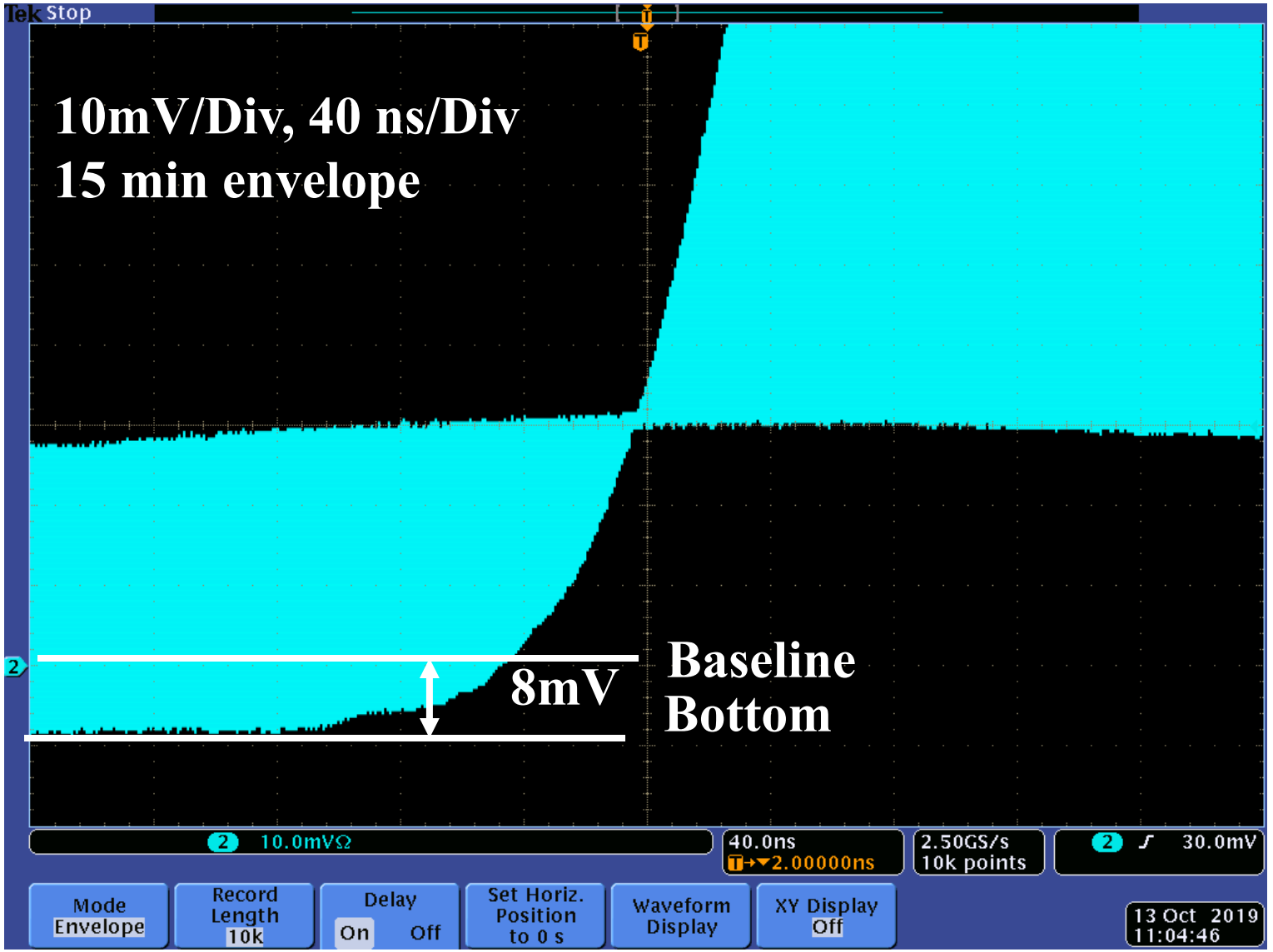
A trigger set to 30 mV would require a signal bottom within 15 mV of nominal

Noisy channel 10, 30 mV trigger



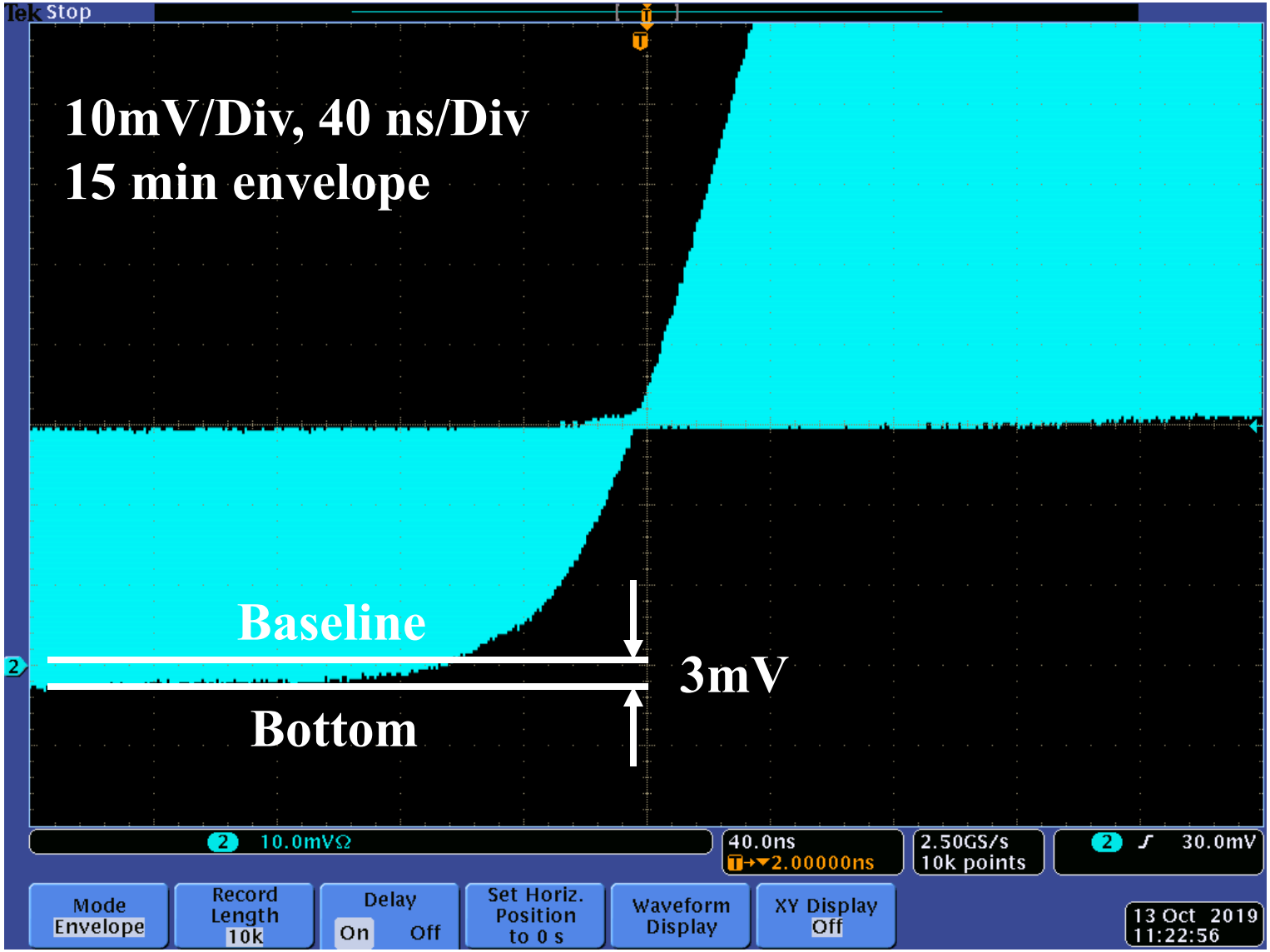
- Want distance between baseline and bottom < 15 mV

Large baseline channel 32, 30 mV trigger



- Want distance between baseline and bottom < 15 mV

Typical channel 3, 30 mV trigger



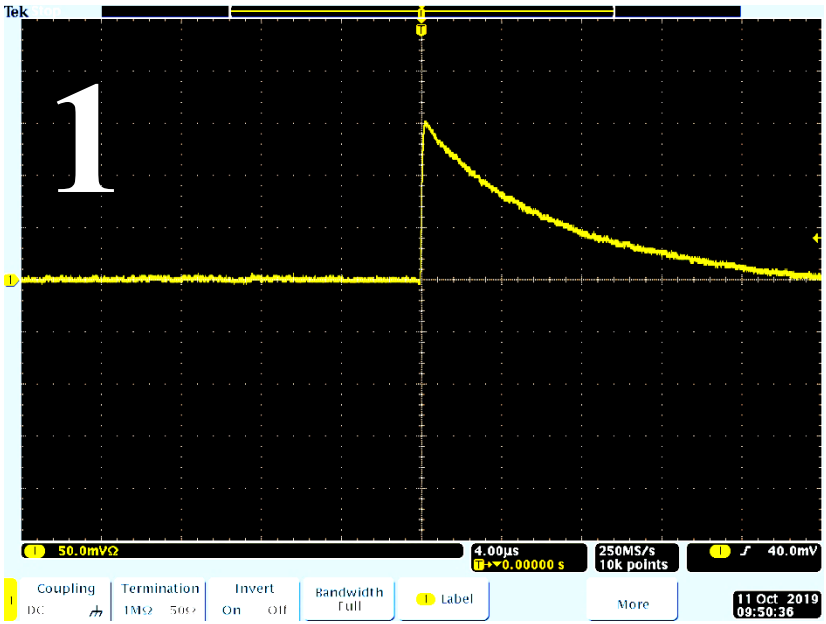
- Need distance between baseline and bottom < 15 mV

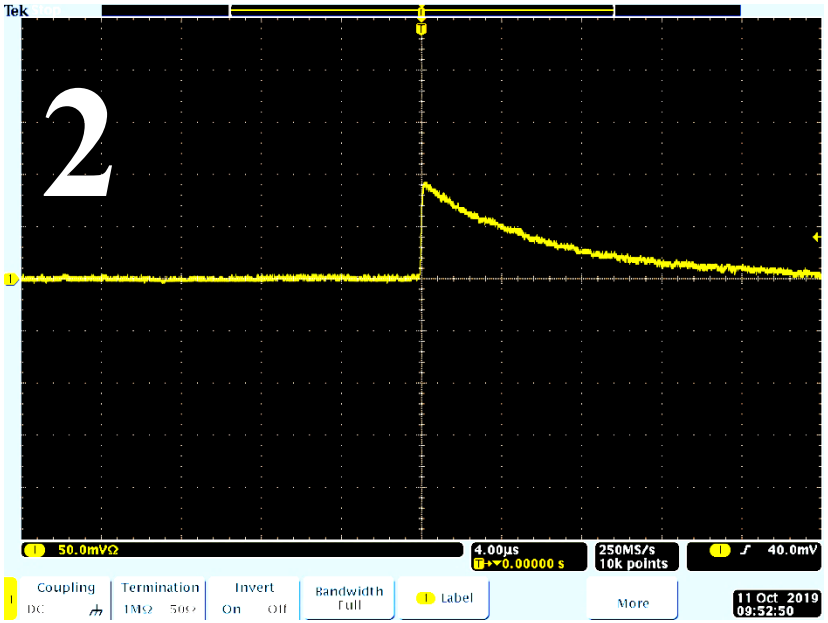
Remarks

- Did not find any need to switch out the preamps or filter boards ☺
- All looks well for TPOL to run using a 30 mV trigger

All scope pictures shown in remaining slides

Channels 1-4


Tek
1
50.0mVΩ
4.00µs
0.00000 s
250MS/s
10k points
40.0mV
Coupling
DC
Termination
1MΩ 50Ω
Invert
On Off
Bandwidth
Full
Label
More
11 Oct 2019
09:50:36


Tek
2
50.0mVΩ
4.00µs
0.00000 s
250MS/s
10k points
40.0mV
Coupling
DC
Termination
1MΩ 50Ω
Invert
On Off
Bandwidth
Full
Label
More
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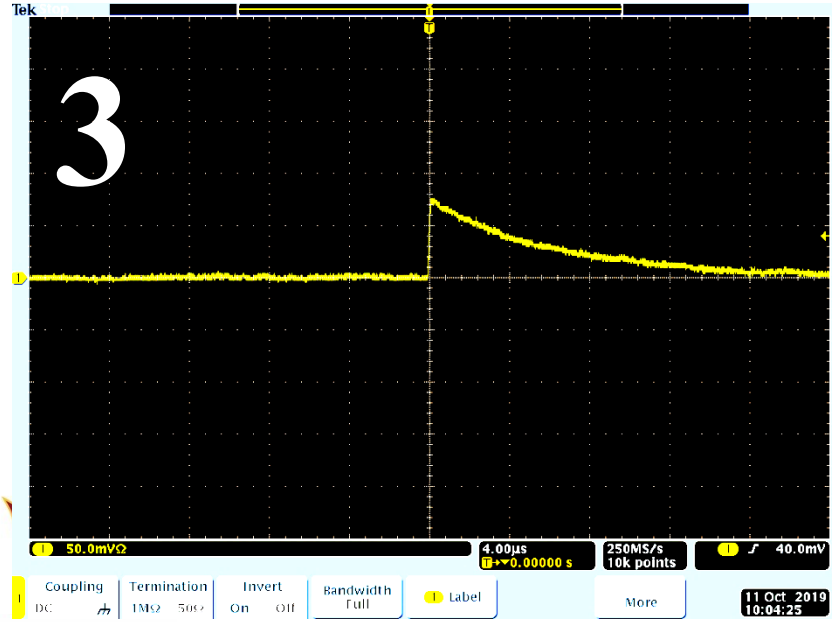
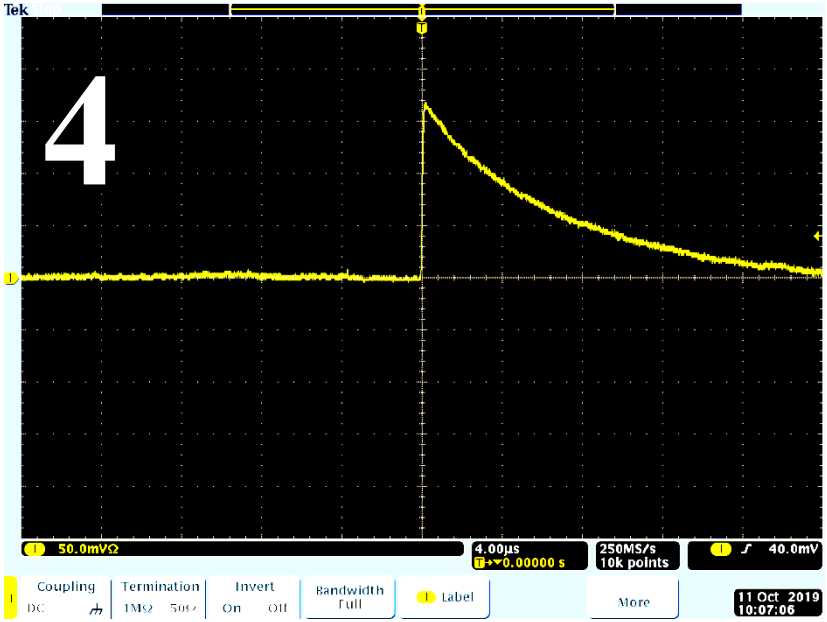
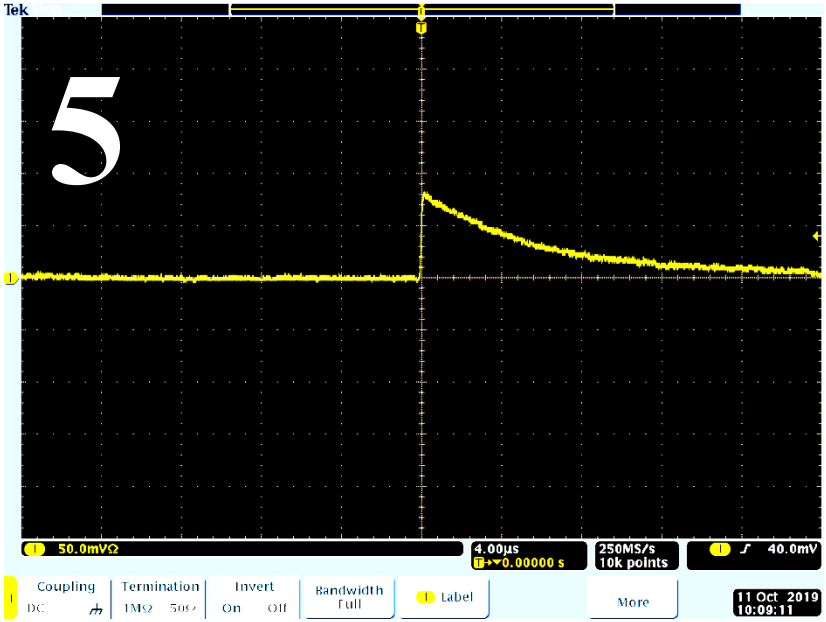
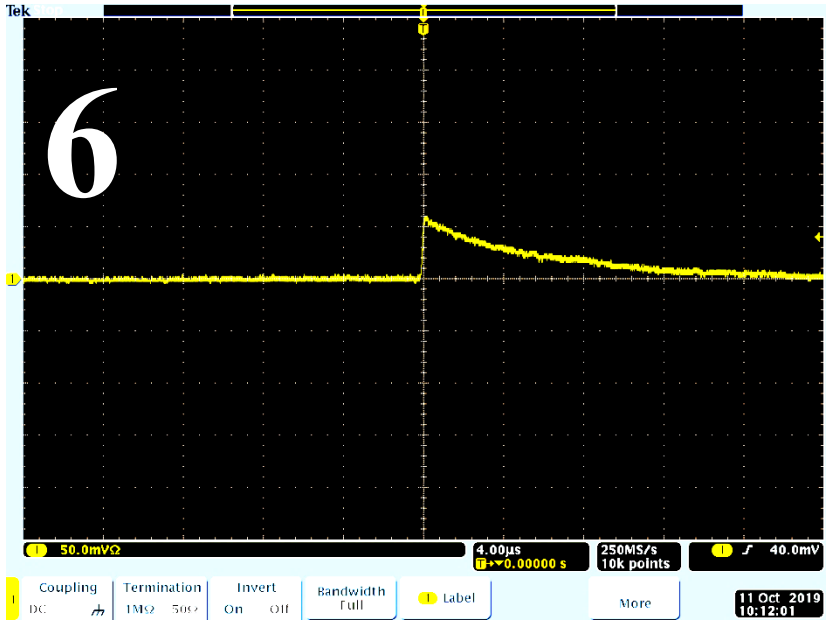
09:52:50

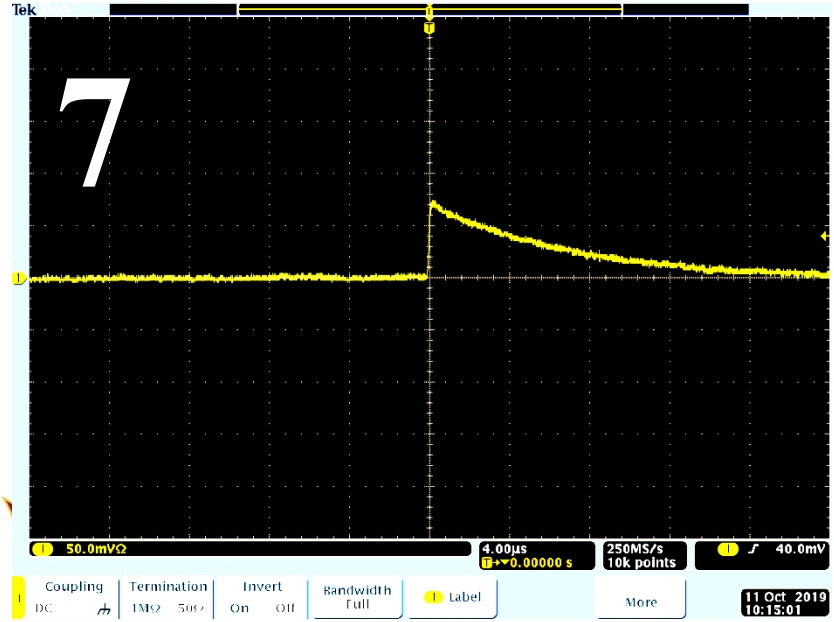

Tek
3
50.0mVΩ
4.00µs
0.00000 s
250MS/s
10k points
40.0mV
Coupling
DC
Termination
1MΩ 50Ω
Invert
On Off
Bandwidth
Full
Label
More
11 Oct 2019
10:04:25

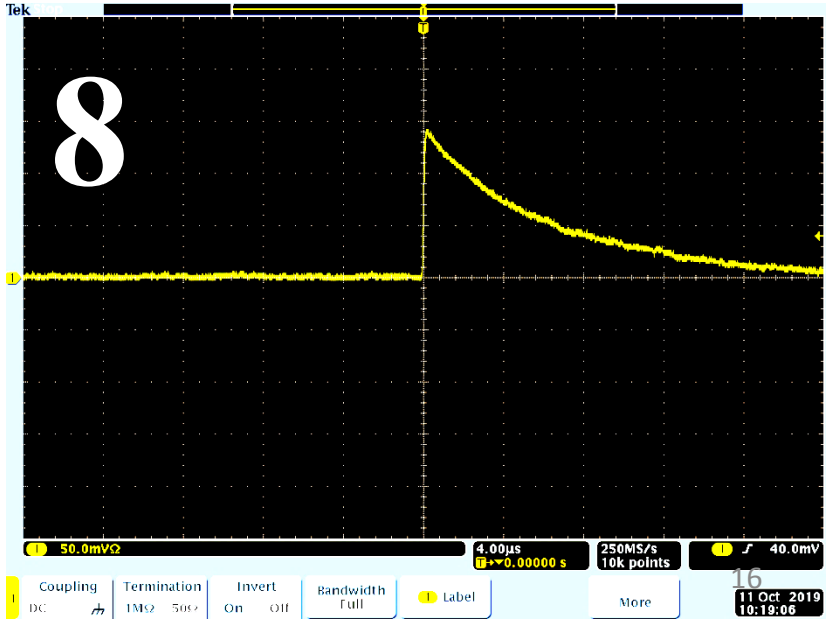

Tek
4
50.0mVΩ
4.00µs
0.00000 s
250MS/s
10k points
40.0mV
Coupling
DC
Termination
1MΩ 50Ω
Invert
On Off
Bandwidth
Full
Label
More
11 Oct 2019
10:07:06

Channels 5-8

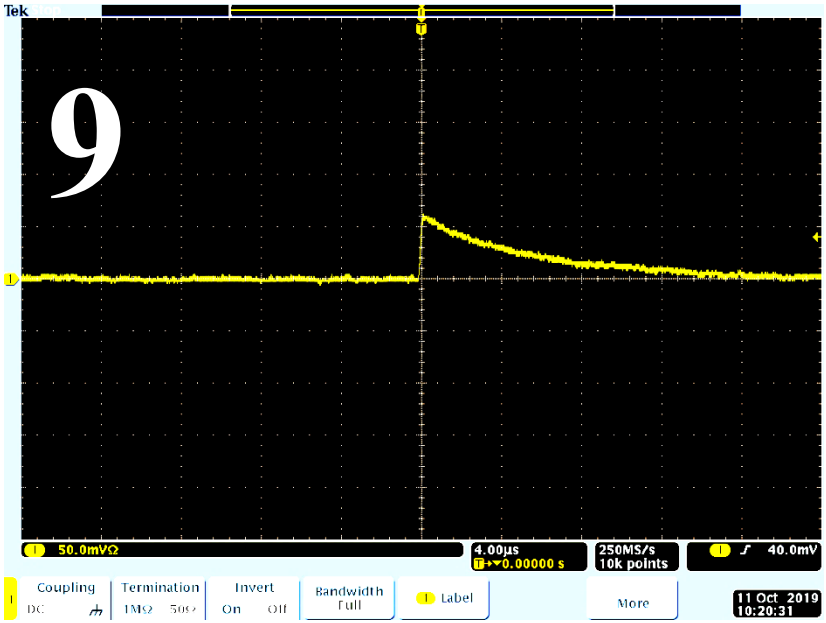

Tek
5
50.0mVΩ
4.00µs
0.00000 s
250MS/s
10k points
40.0mV
Coupling
DC
Termination
1MΩ 50Ω
Invert
On Off
Bandwidth
Full
Label
More
11 Oct 2019
10:09:11

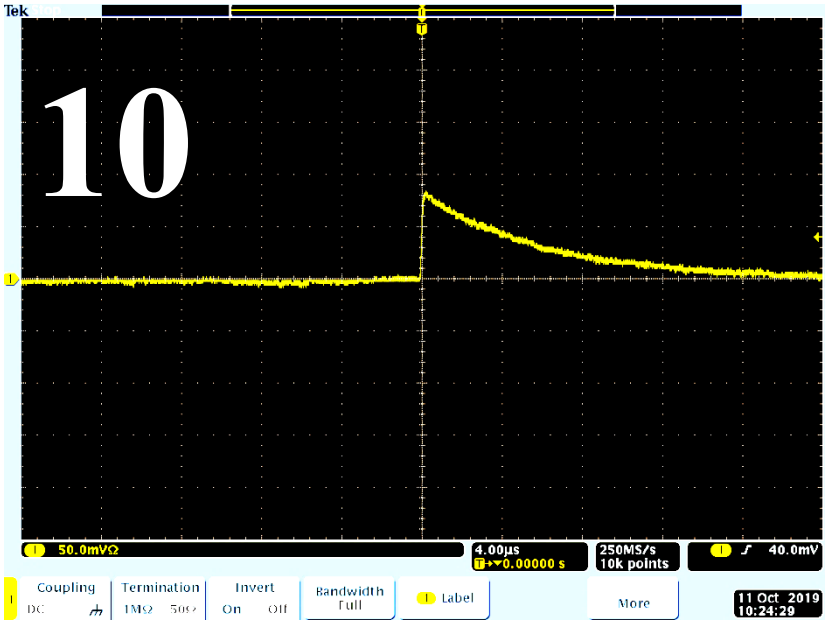

Tek
6
50.0mVΩ
4.00µs
0.00000 s
250MS/s
10k points
40.0mV
Coupling
DC
Termination
1MΩ 50Ω
Invert
On Off
Bandwidth
Full
Label
More
11 Oct 2019
10:12:01

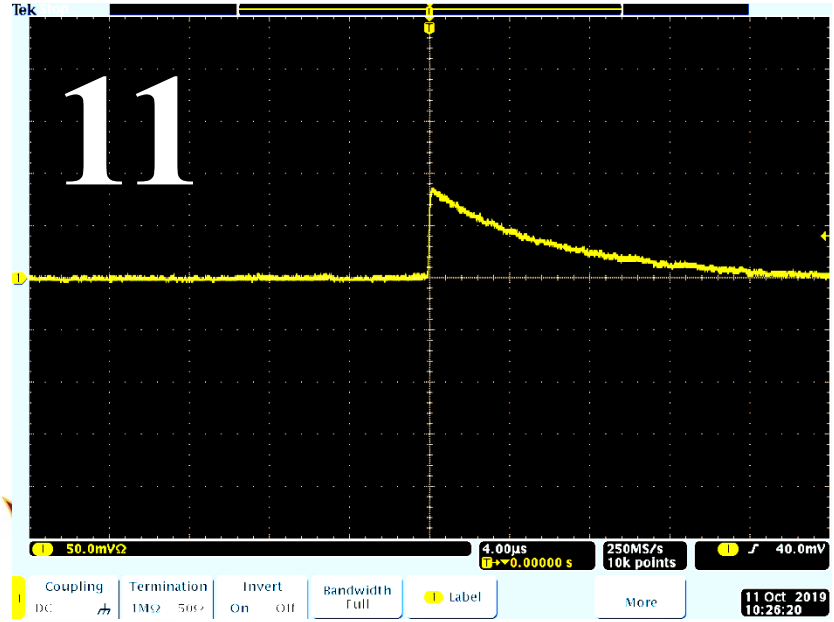

Tek
7
50.0mVΩ
4.00µs
0.00000 s
250MS/s
10k points
40.0mV
Coupling
DC
Termination
1MΩ 50Ω
Invert
On Off
Bandwidth
Full
Label
More
11 Oct 2019
10:15:01

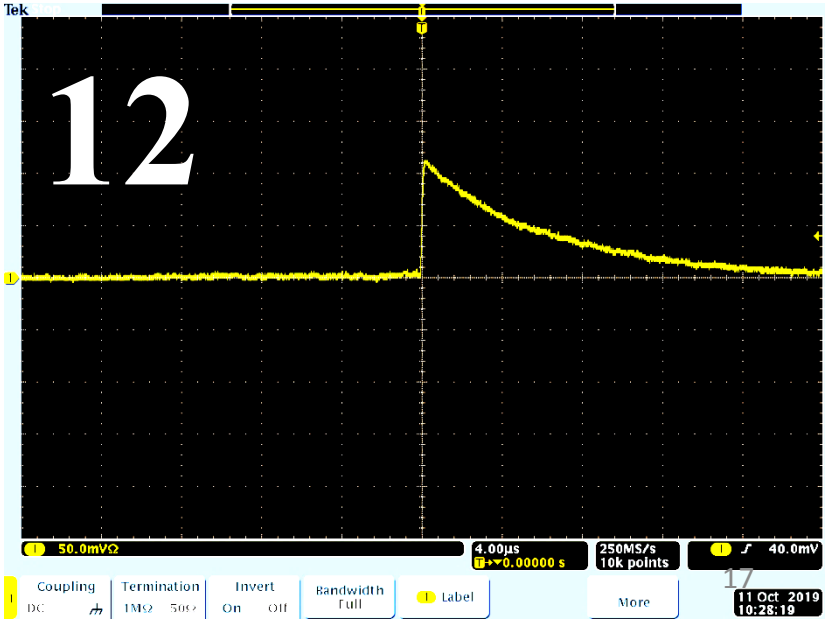

Tek
8
50.0mVΩ
4.00µs
0.00000 s
250MS/s
10k points
40.0mV
Coupling
DC
Termination
1MΩ 50Ω
Invert
On Off
Bandwidth
Full
Label
More
11 Oct 2019
10:19:06

Channels 9-12

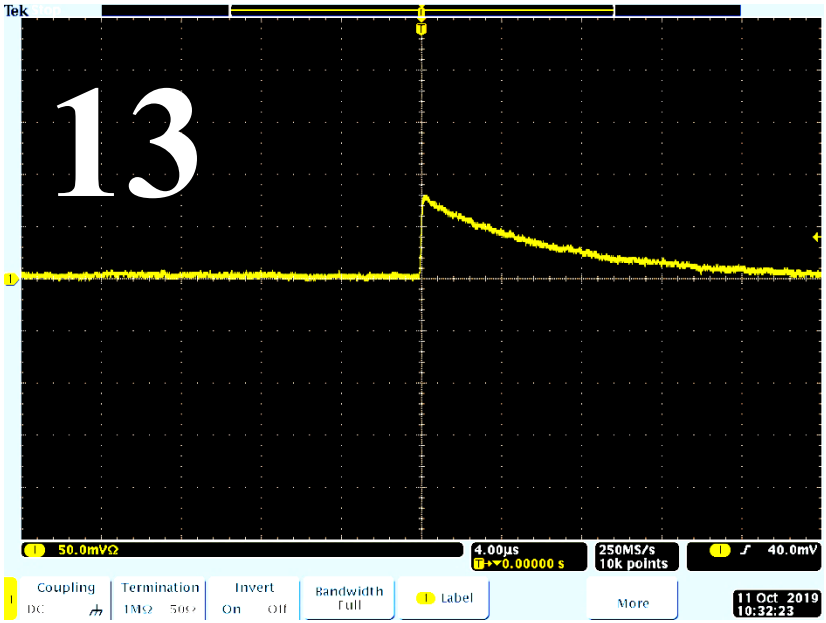


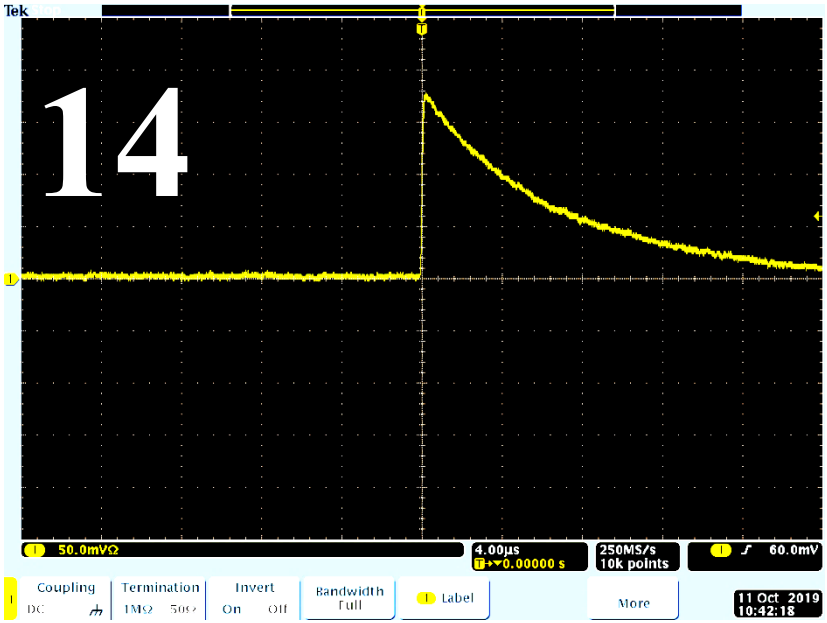


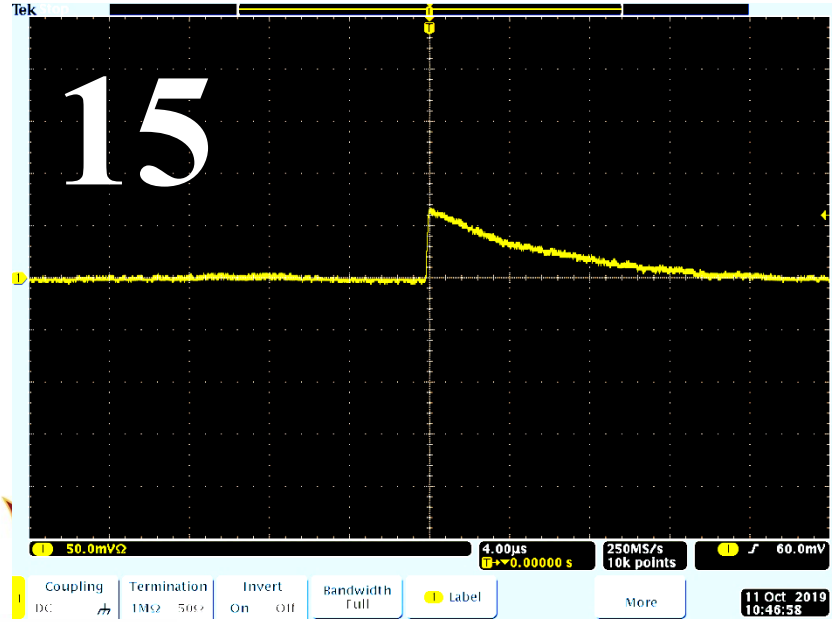


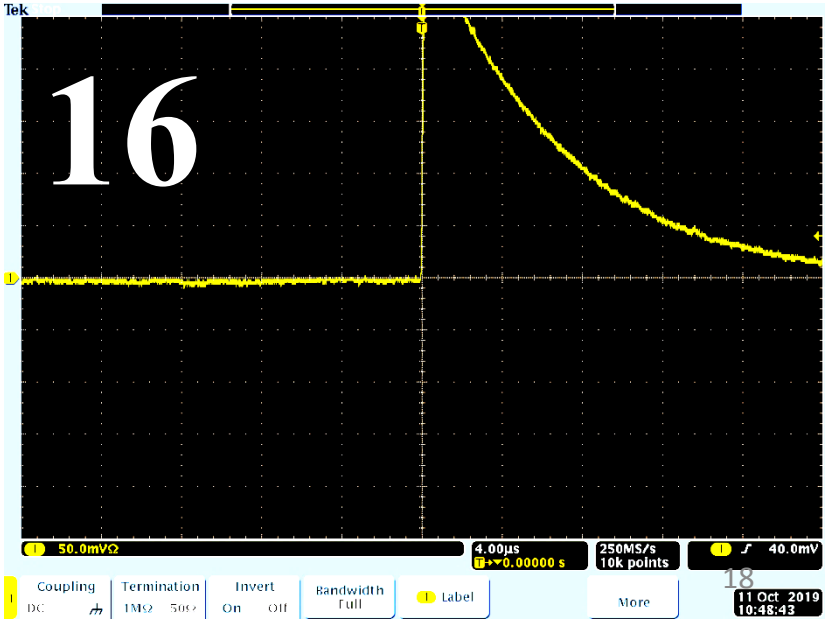


Channels 13-16

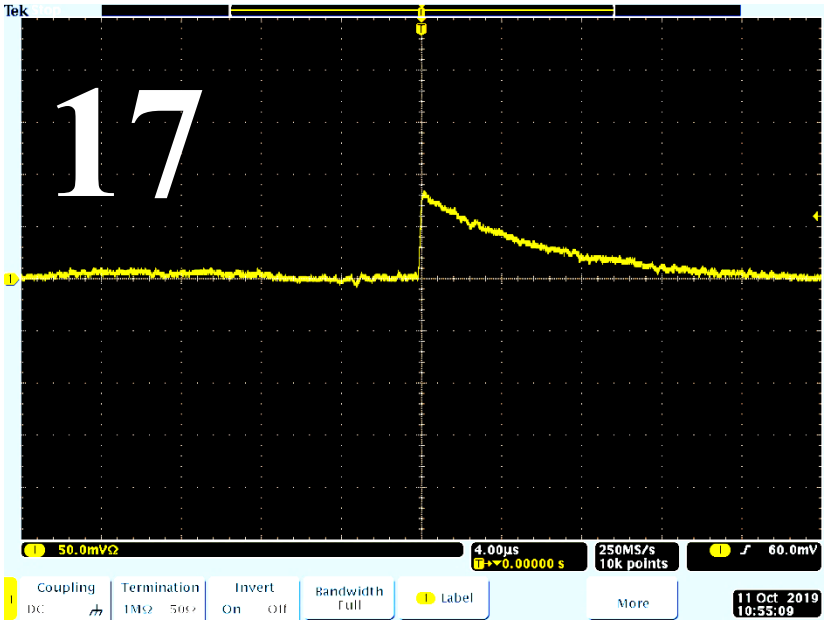


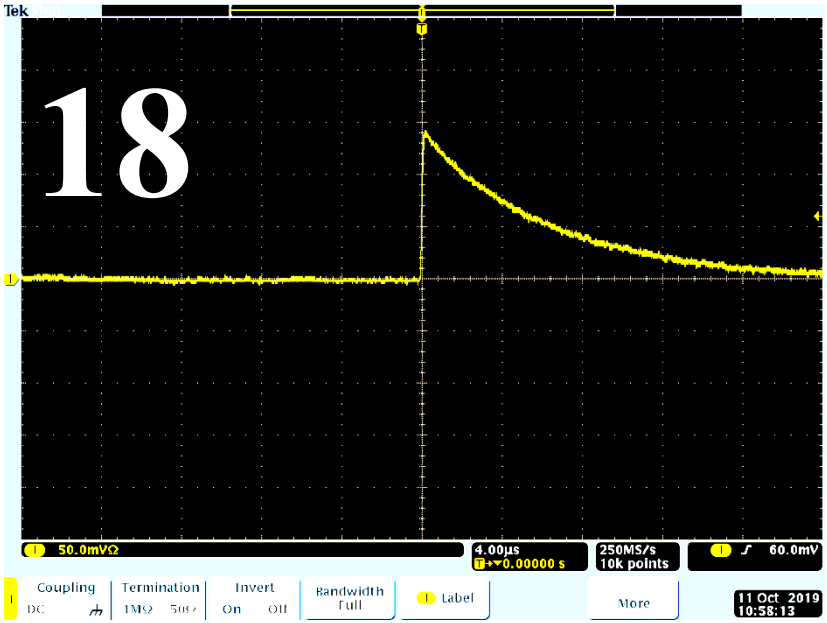


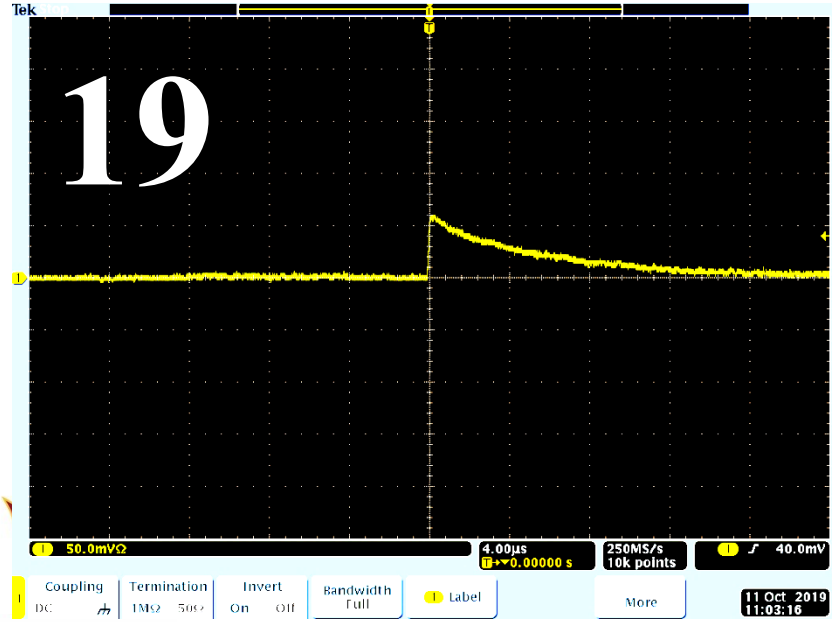


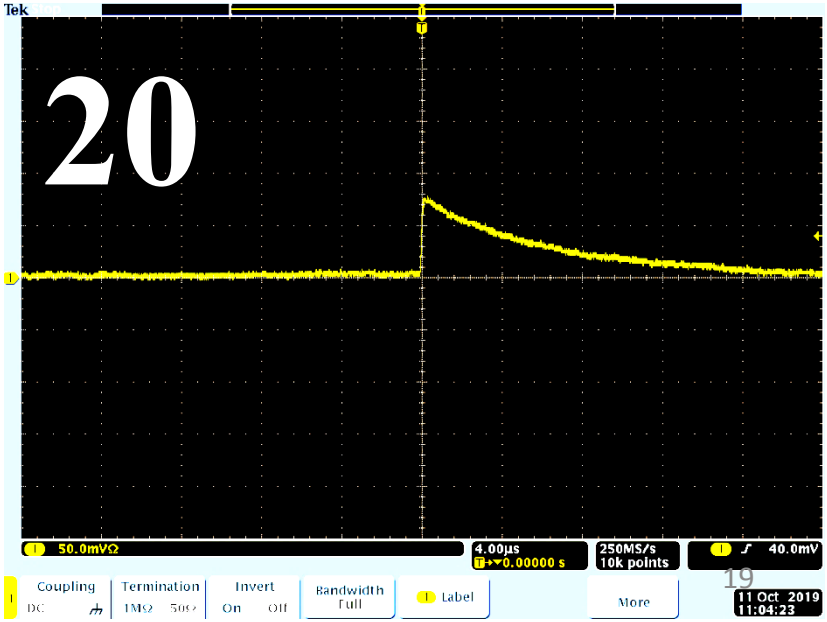


Channels 17-20

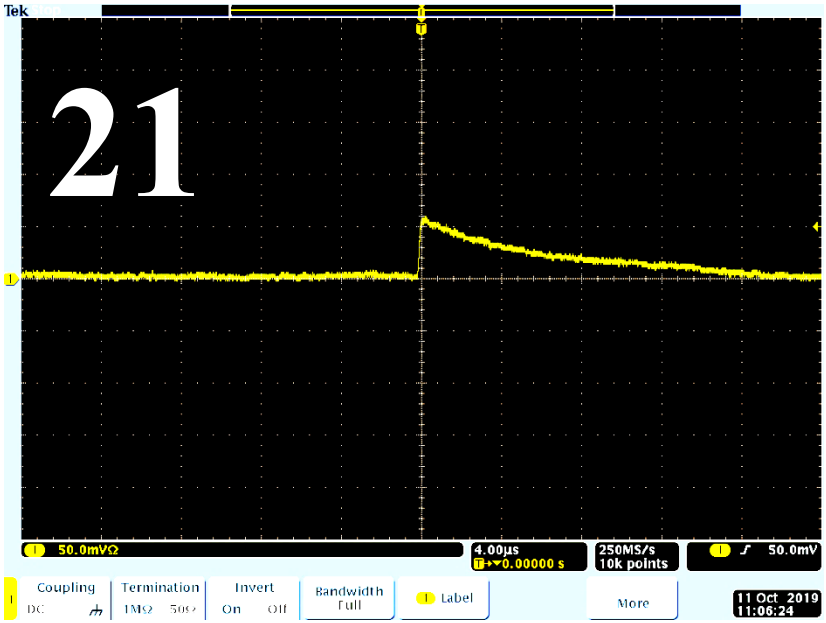


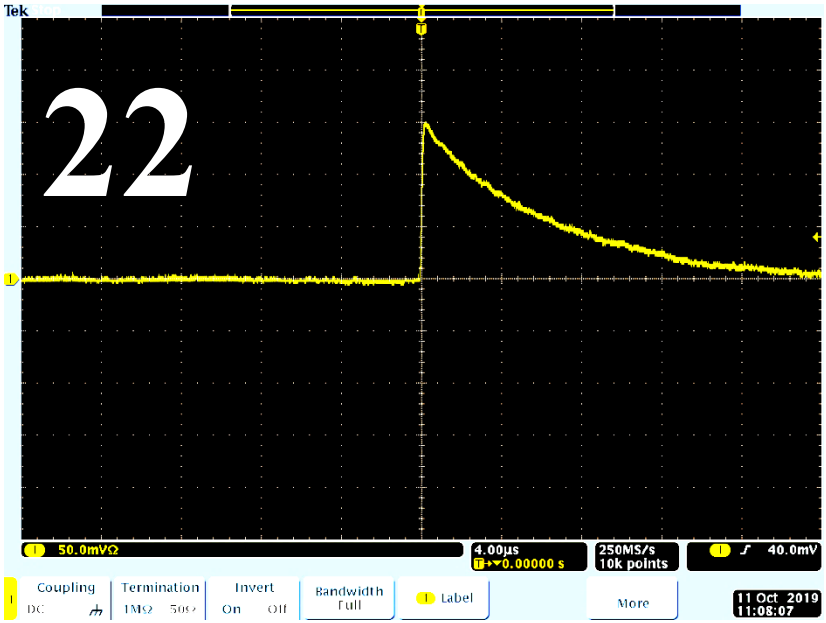


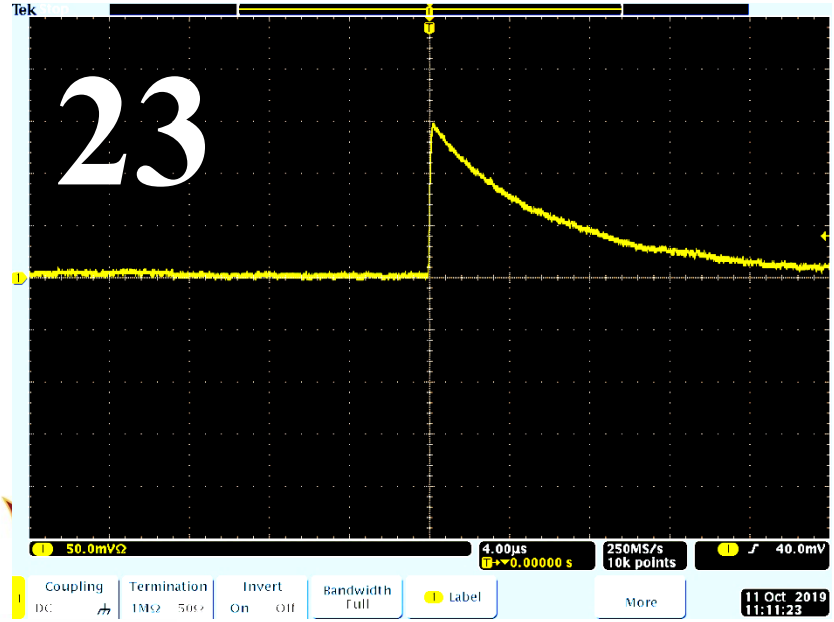


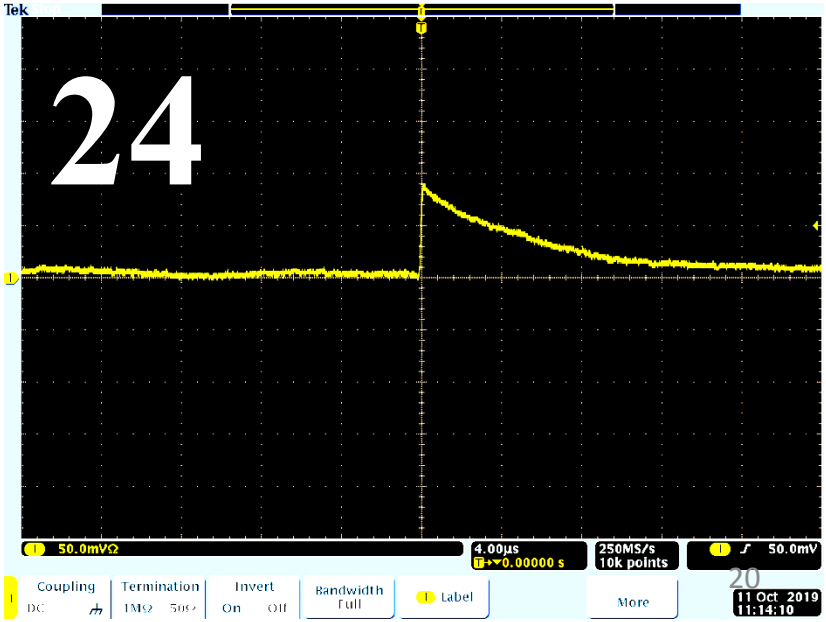


Channels 21-24

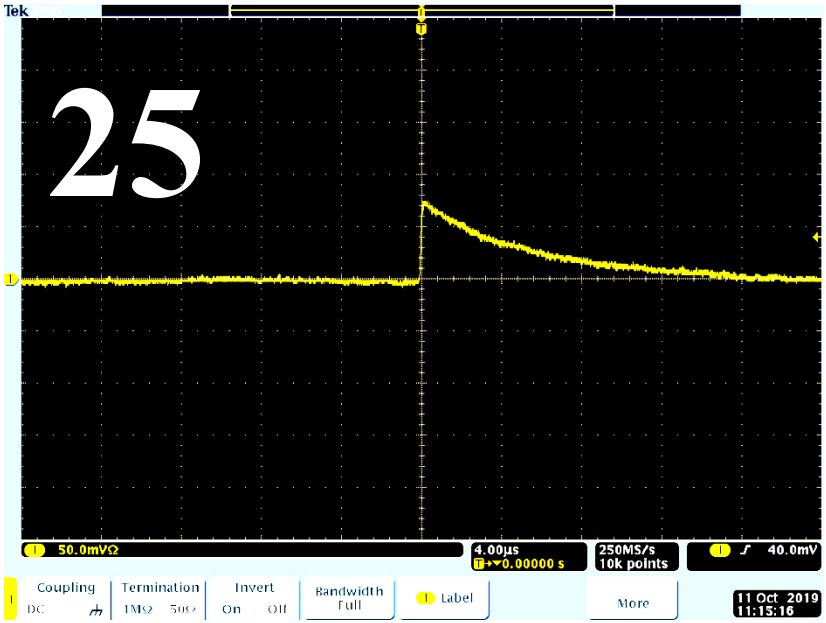


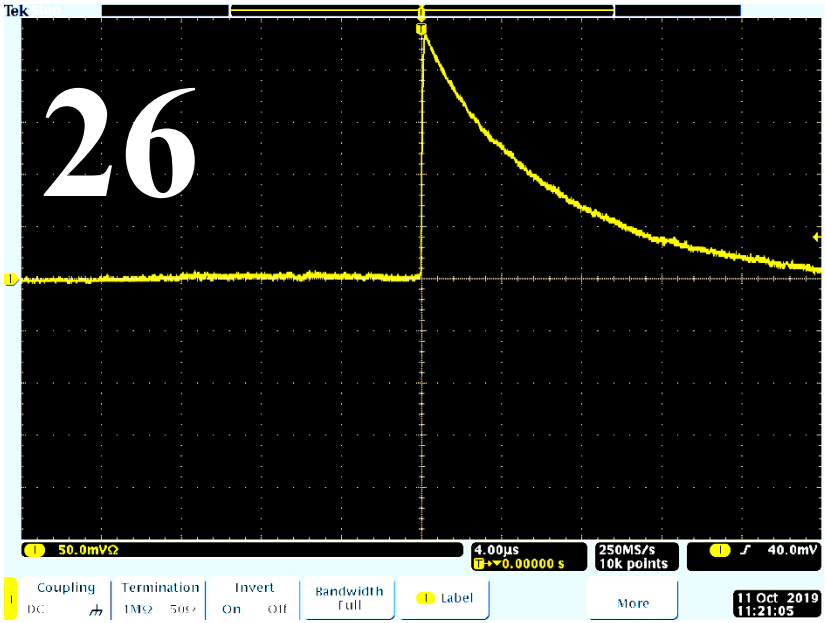


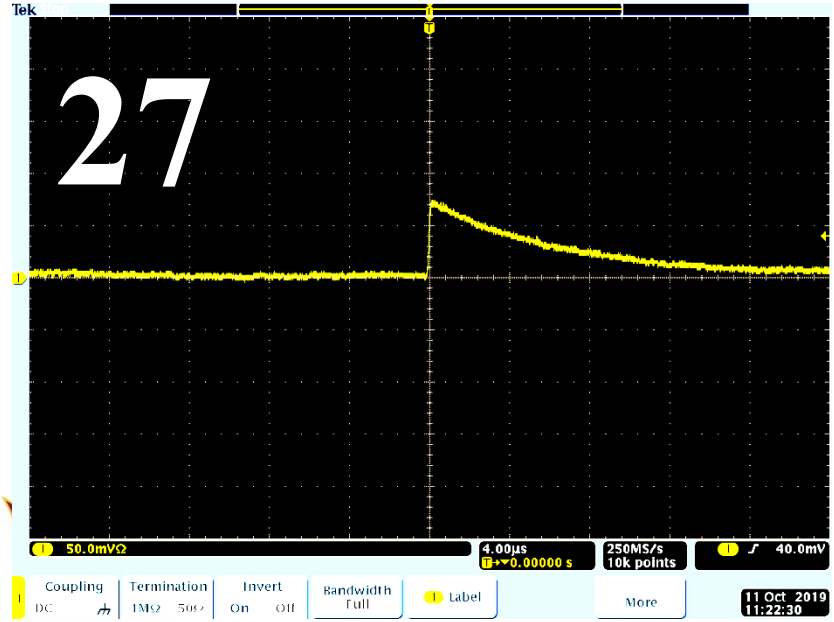


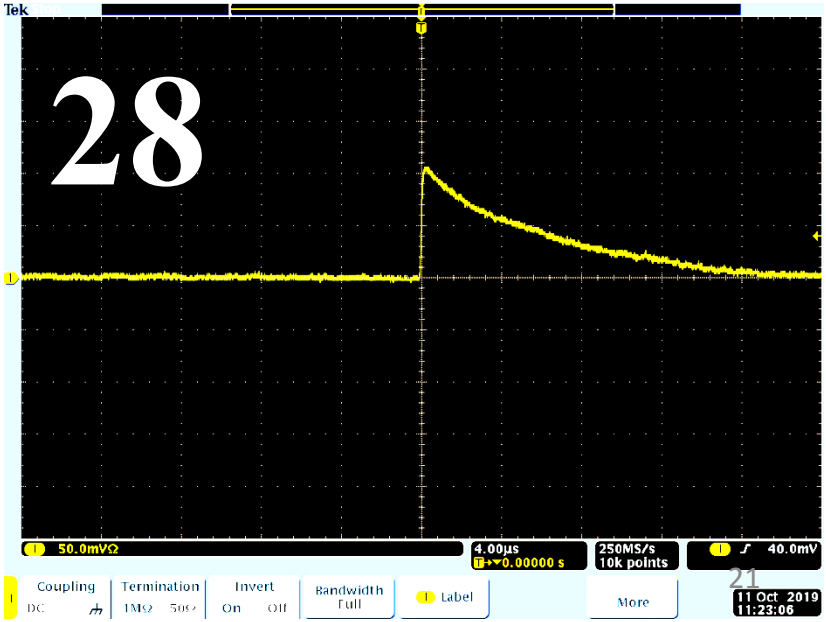


Channels 25-28

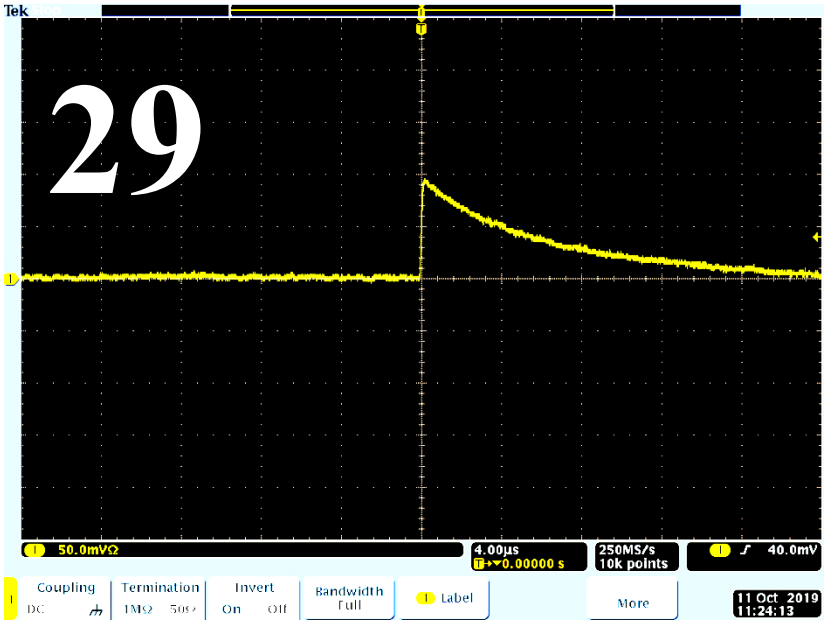


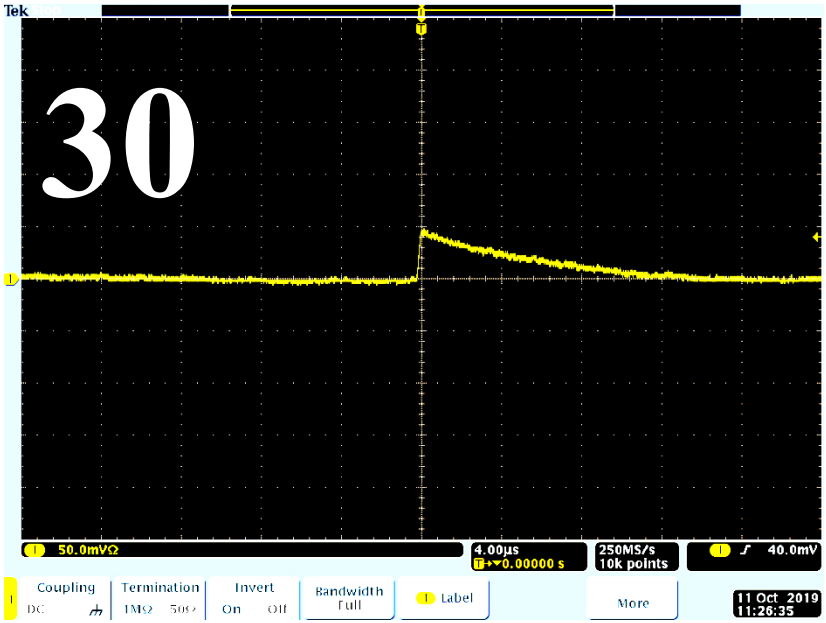


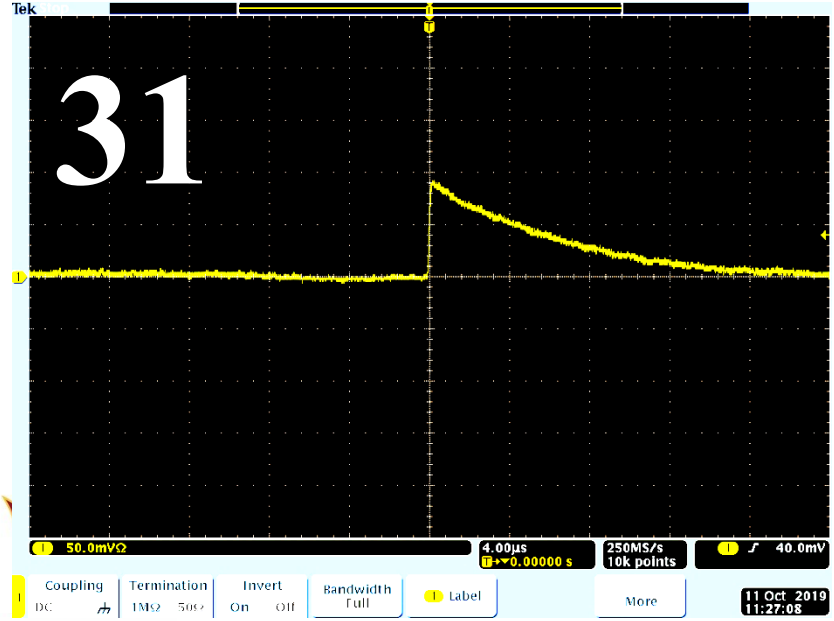


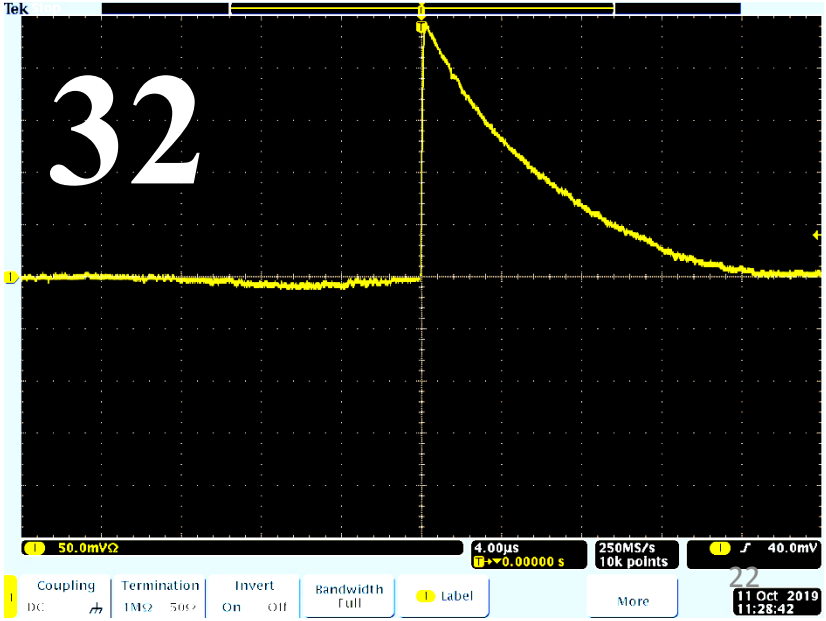


Channels 29-32

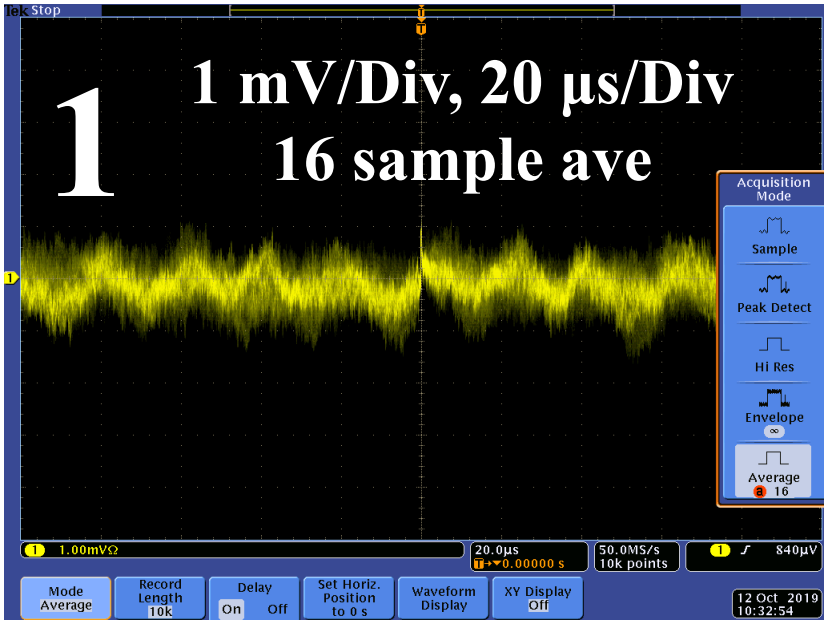


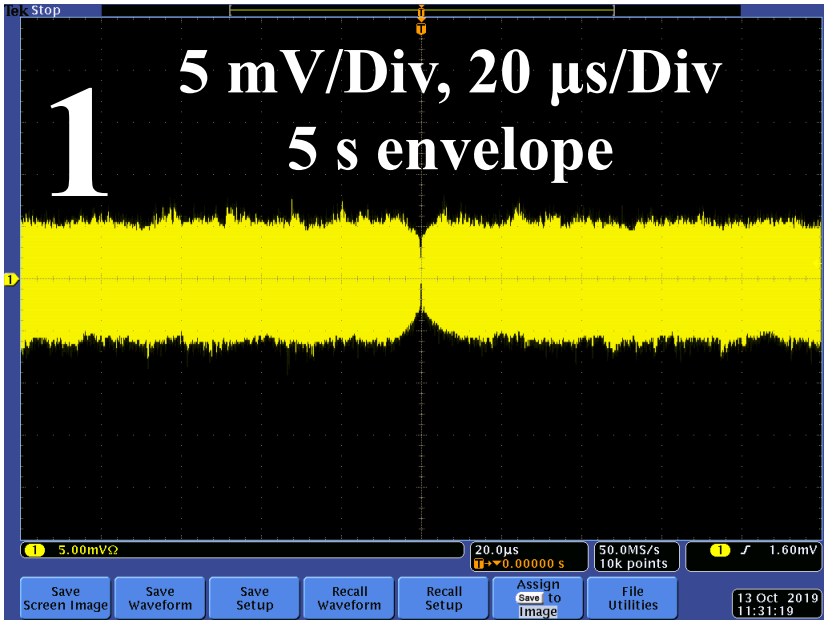


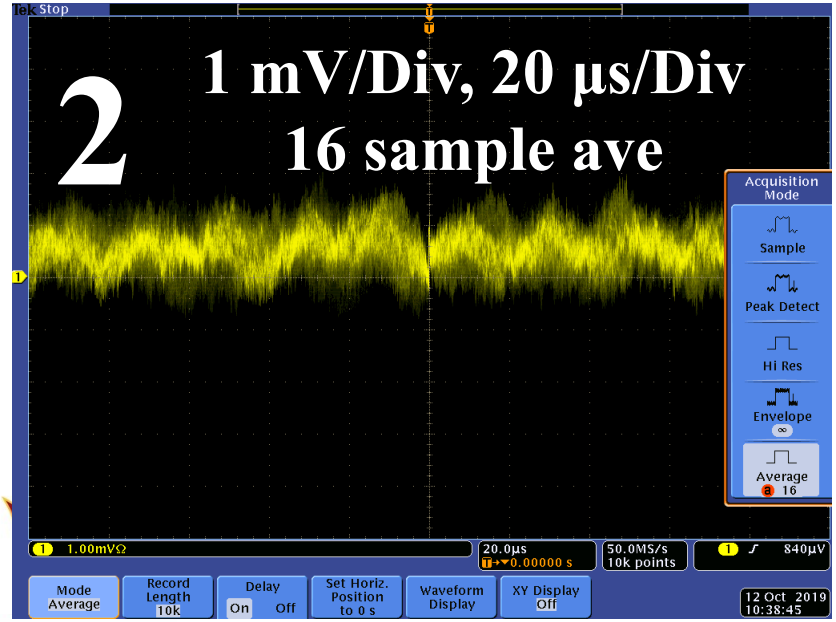


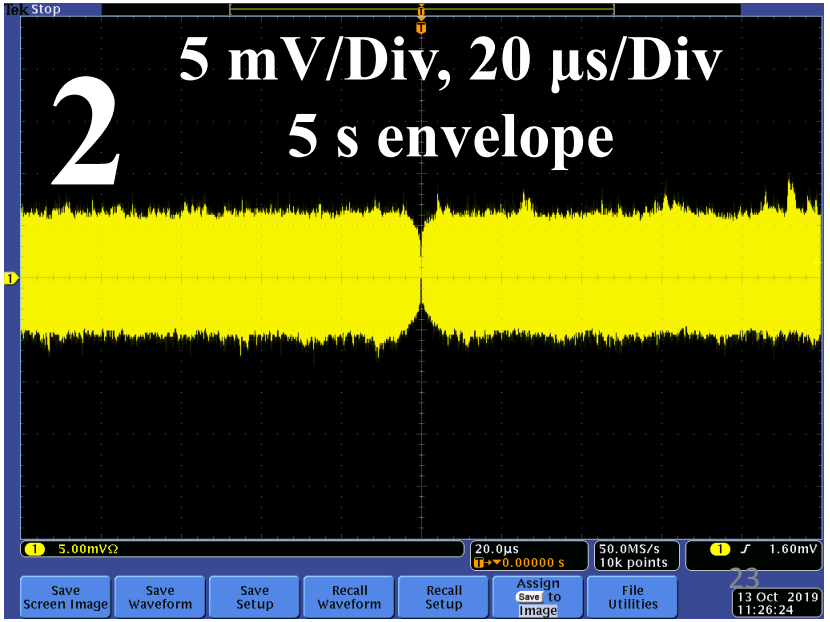


Channels 1-2

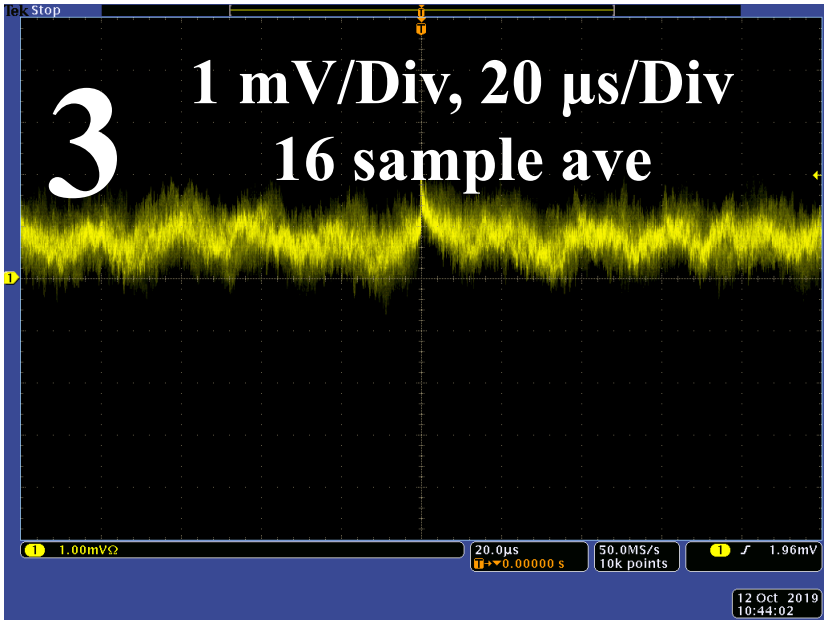

Tek Stop
1
1 mV/Div, 20 µs/Div
16 sample ave
Acquisition Mode
Sample
Peak Detect
Hi Res
Envelope
Average 16
1.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
840µV
Mode Average
Record Length 10k
Delay On Off
Set Horiz. Position to 0 s
Waveform Display
XY Display Off
12 Oct 2019
10:32:54

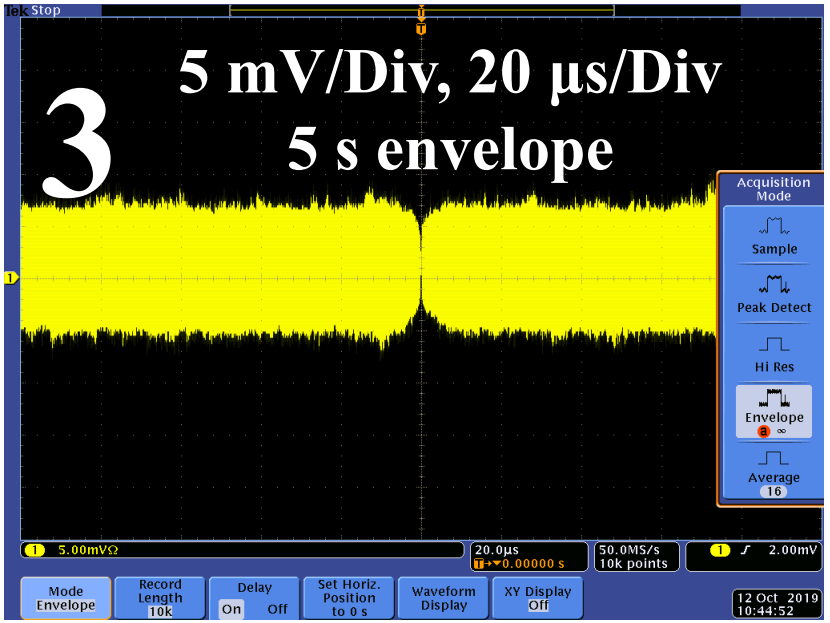

Tek Stop
1
5 mV/Div, 20 µs/Div
5 s envelope
5.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
1.60mV
Save Screen Image
Save Waveform
Save Setup
Recall Waveform
Recall Setup
Assign Save to Image
File Utilities
13 Oct 2019
11:31:19

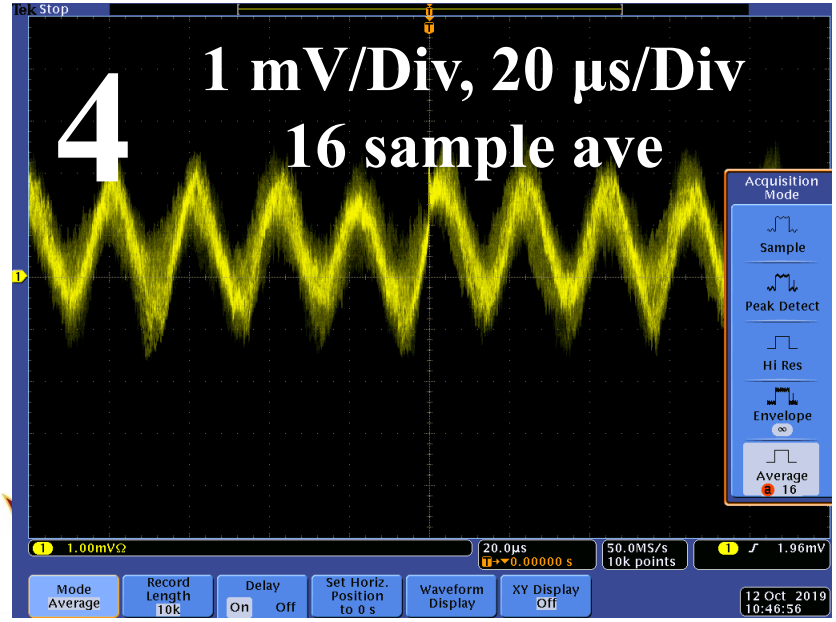

Tek Stop
2
1 mV/Div, 20 µs/Div
16 sample ave
Acquisition Mode
Sample
Peak Detect
Hi Res
Envelope
Average 16
1.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
840µV
Mode Average
Record Length 10k
Delay On Off
Set Horiz. Position to 0 s
Waveform Display
XY Display Off
12 Oct 2019
10:38:45

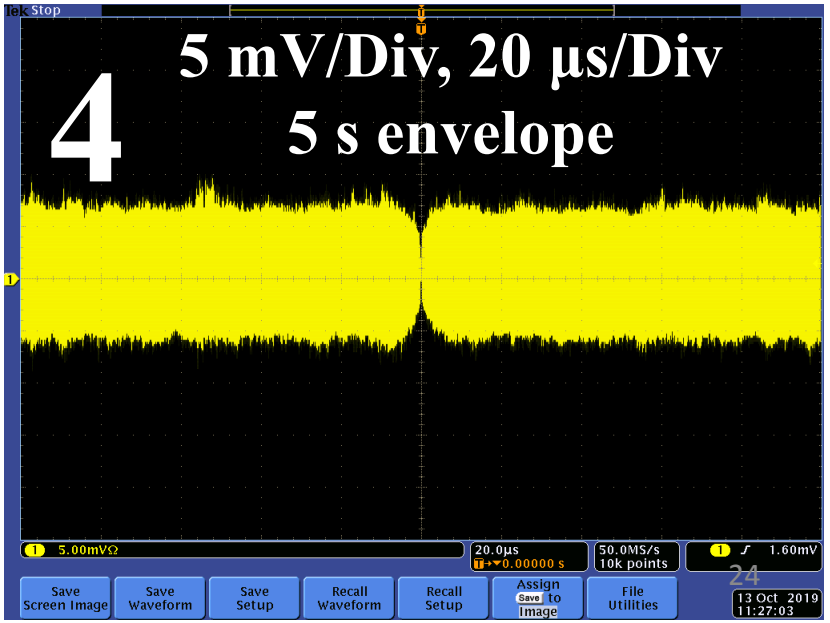

Tek Stop
2
5 mV/Div, 20 µs/Div
5 s envelope
5.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
1.60mV
Save Screen Image
Save Waveform
Save Setup
Recall Waveform
Recall Setup
Assign Save to Image
File Utilities
13 Oct 2019
11:26:24

Channels 3-4

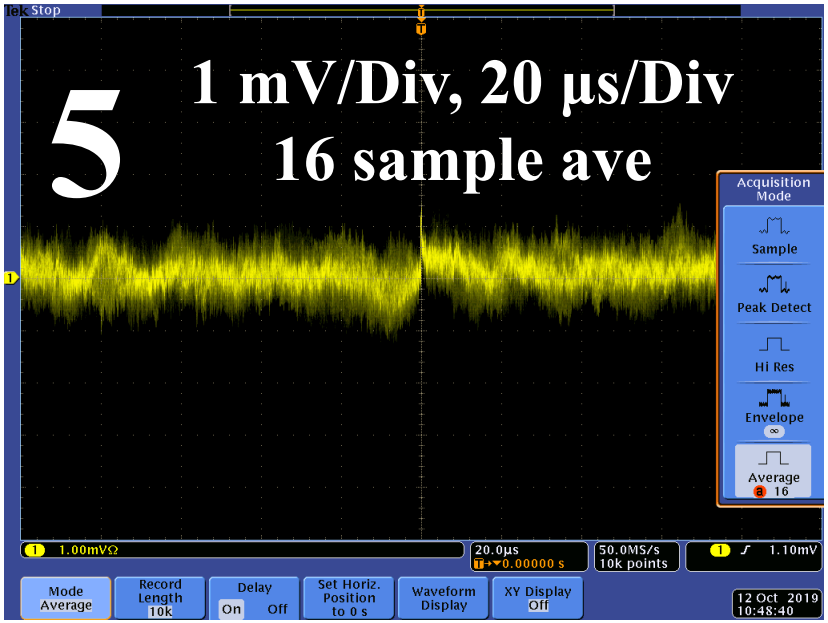

Tek Stop
3
1 mV/Div, 20 µs/Div
16 sample ave
1.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
1.96mV
12 Oct 2019
10:44:02

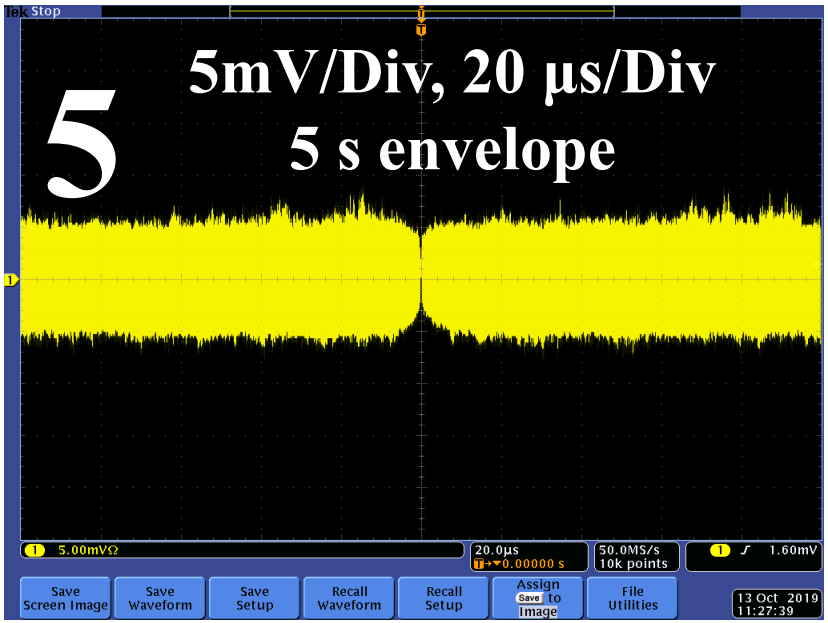

Tek Stop
3
5 mV/Div, 20 µs/Div
5 s envelope
Acquisition Mode
Sample
Peak Detect
Hi Res
Envelope
Average
16
5.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
2.00mV
Mode Envelope
Record Length 10k
Delay On Off
Set Horiz. Position to 0 s
Waveform Display
XY Display Off
12 Oct 2019
10:44:52

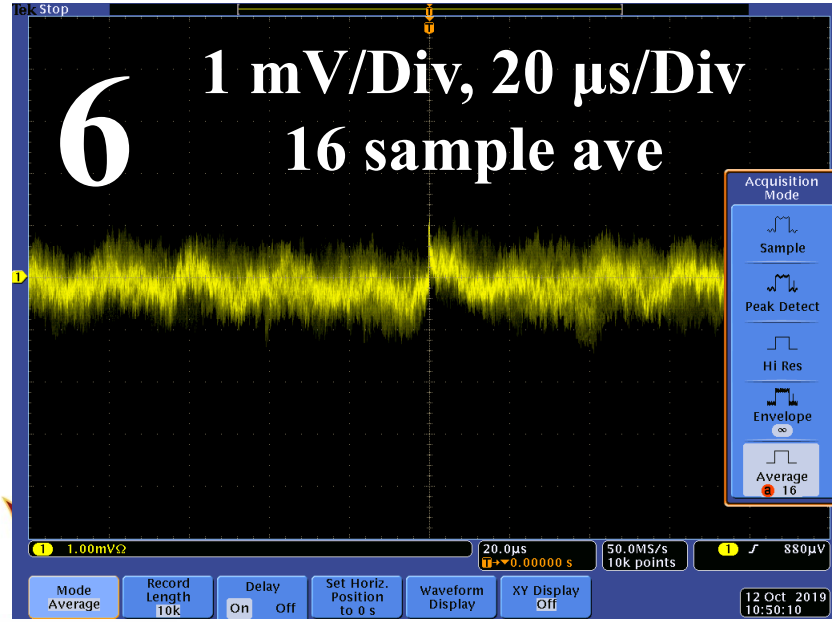

Tek Stop
4
1 mV/Div, 20 µs/Div
16 sample ave
Acquisition Mode
Sample
Peak Detect
Hi Res
Envelope
Average
16
1.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
1.96mV
Mode Average
Record Length 10k
Delay On Off
Set Horiz. Position to 0 s
Waveform Display
XY Display Off
12 Oct 2019
10:46:56

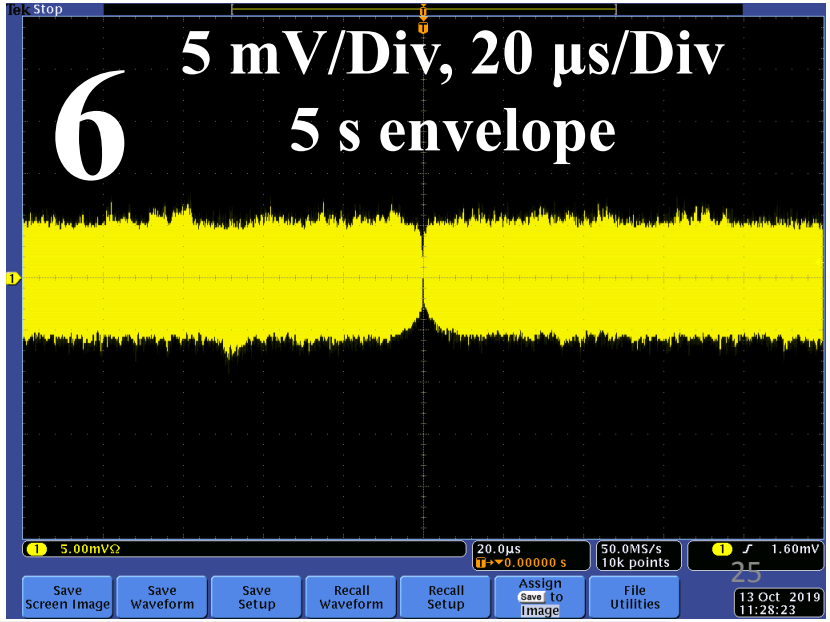

Tek Stop
4
5 mV/Div, 20 µs/Div
5 s envelope
5.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
1.60mV
Save Screen Image
Save Waveform
Save Setup
Recall Waveform
Recall Setup
Assign Save to Image
File Utilities
13 Oct 2019
11:27:03

Channels 5-6

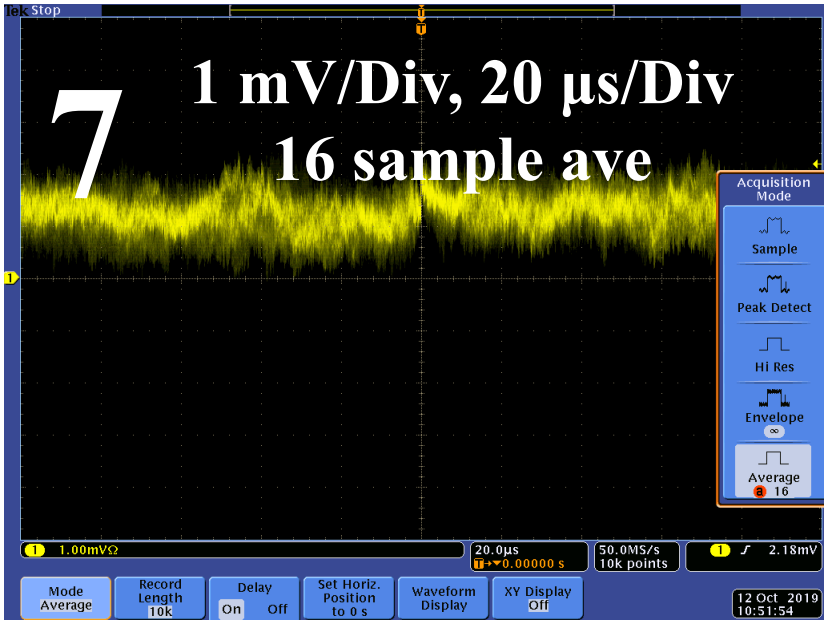

5
1 mV/Div, 20 µs/Div
16 sample ave
Acquisition Mode
Sample
Peak Detect
Hi Res
Envelope
Average 16
1.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
1.10mV
Mode Average
Record Length 10k
Delay On Off
Set Horiz. Position to 0 s
Waveform Display
XY Display Off
12 Oct 2019
10:48:40

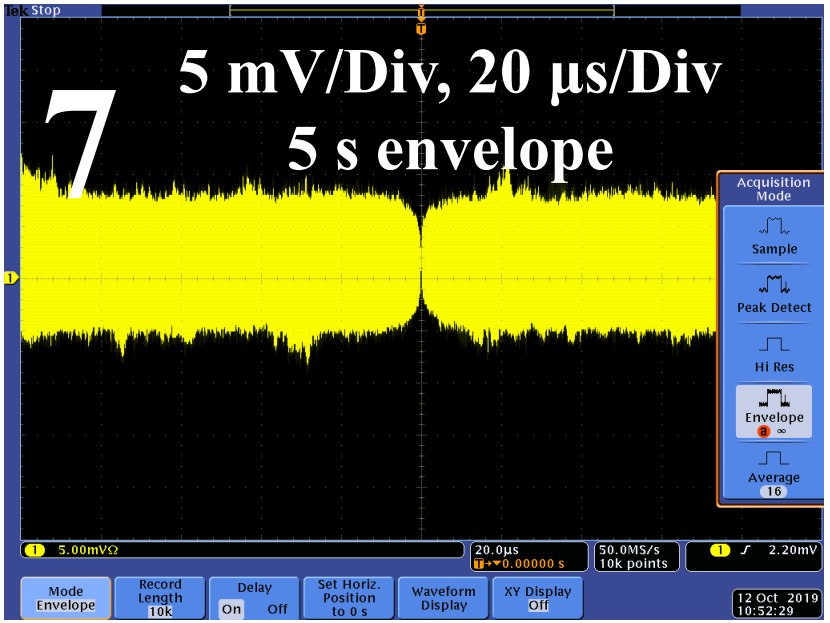

5
5mV/Div, 20 µs/Div
5 s envelope
5.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
1.60mV
Save Screen Image
Save Waveform
Save Setup
Recall Waveform
Recall Setup
Assign Save to Image
File Utilities
13 Oct 2019
11:27:39

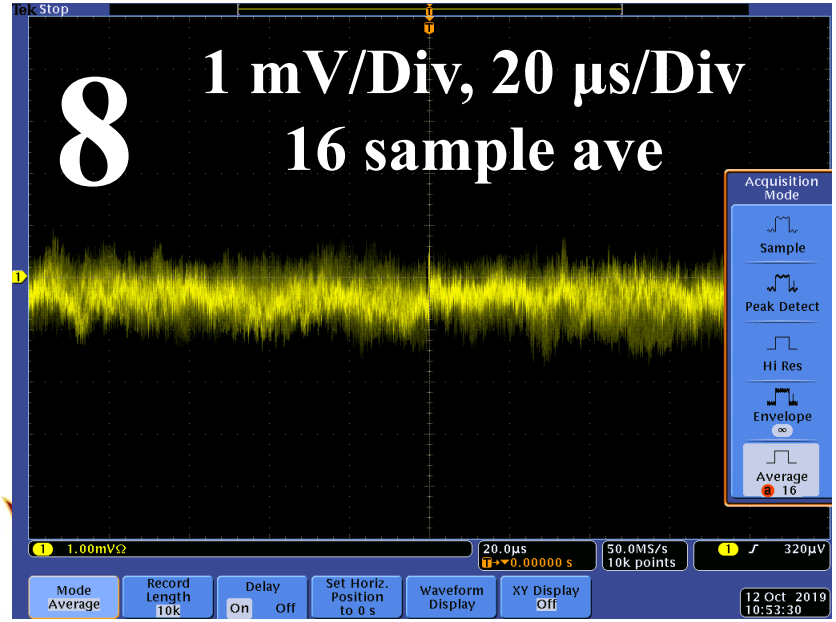

6
1 mV/Div, 20 µs/Div
16 sample ave
Acquisition Mode
Sample
Peak Detect
Hi Res
Envelope
Average 16
1.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
880µV
Mode Average
Record Length 10k
Delay On Off
Set Horiz. Position to 0 s
Waveform Display
XY Display Off
12 Oct 2019
10:50:10

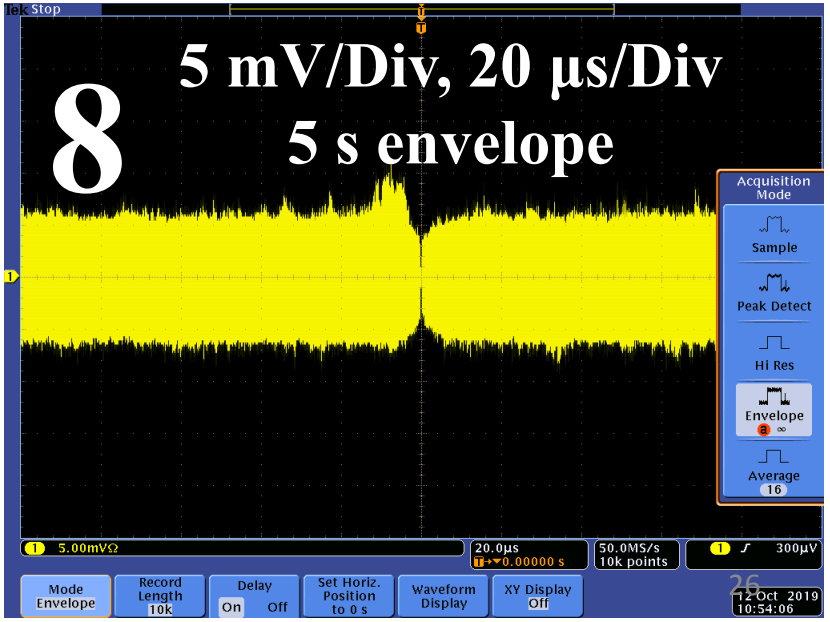

6
5 mV/Div, 20 µs/Div
5 s envelope
5.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
1.60mV
Save Screen Image
Save Waveform
Save Setup
Recall Waveform
Recall Setup
Assign Save to Image
File Utilities
13 Oct 2019
11:28:23

Channels 7-8

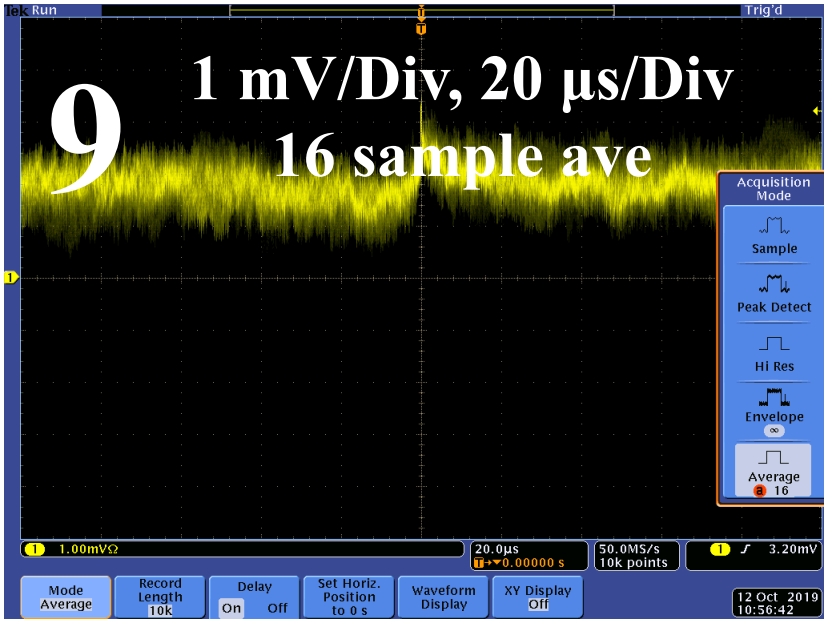

7
1 mV/Div, 20 µs/Div
16 sample ave
Acquisition Mode
Sample
Peak Detect
Hi Res
Envelope
Average 16
1.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
2.18mV
Mode Average
Record Length 10k
Delay On Off
Set Horiz. Position to 0 s
Waveform Display
XY Display Off
12 Oct 2019
10:51:54

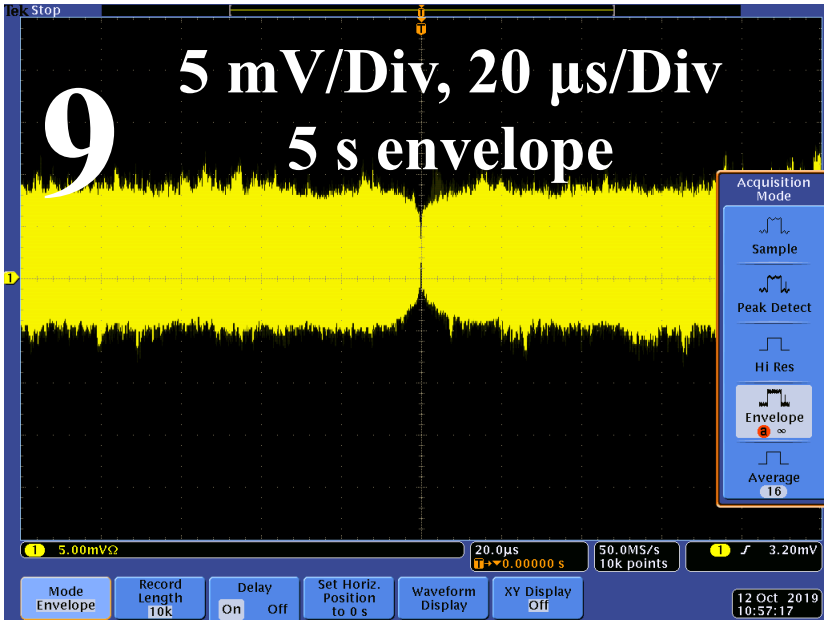

7
5 mV/Div, 20 µs/Div
5 s envelope
Acquisition Mode
Sample
Peak Detect
Hi Res
Envelope
Average 16
5.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
2.20mV
Mode Envelope
Record Length 10k
Delay On Off
Set Horiz. Position to 0 s
Waveform Display
XY Display Off
12 Oct 2019
10:52:29

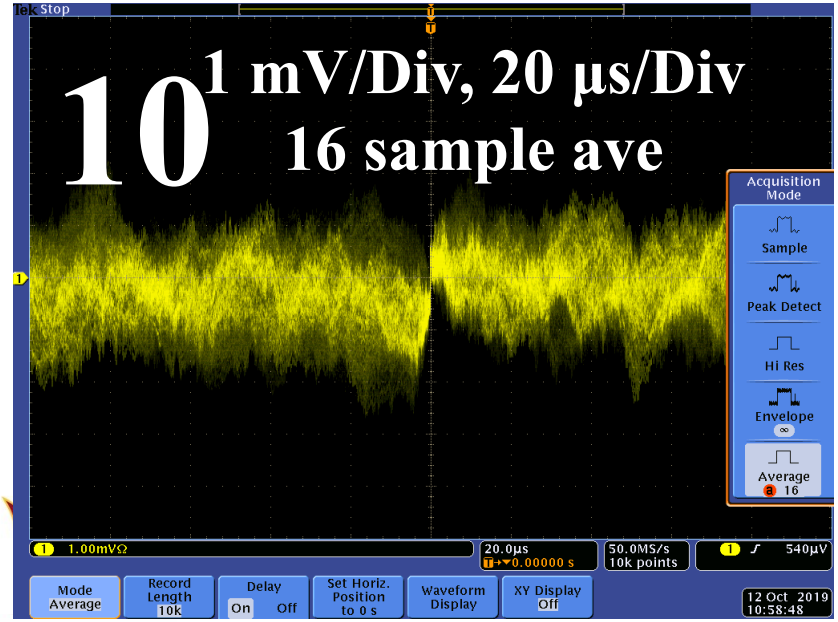

8
1 mV/Div, 20 µs/Div
16 sample ave
Acquisition Mode
Sample
Peak Detect
Hi Res
Envelope
Average 16
1.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
320µV
Mode Average
Record Length 10k
Delay On Off
Set Horiz. Position to 0 s
Waveform Display
XY Display Off
12 Oct 2019
10:53:30

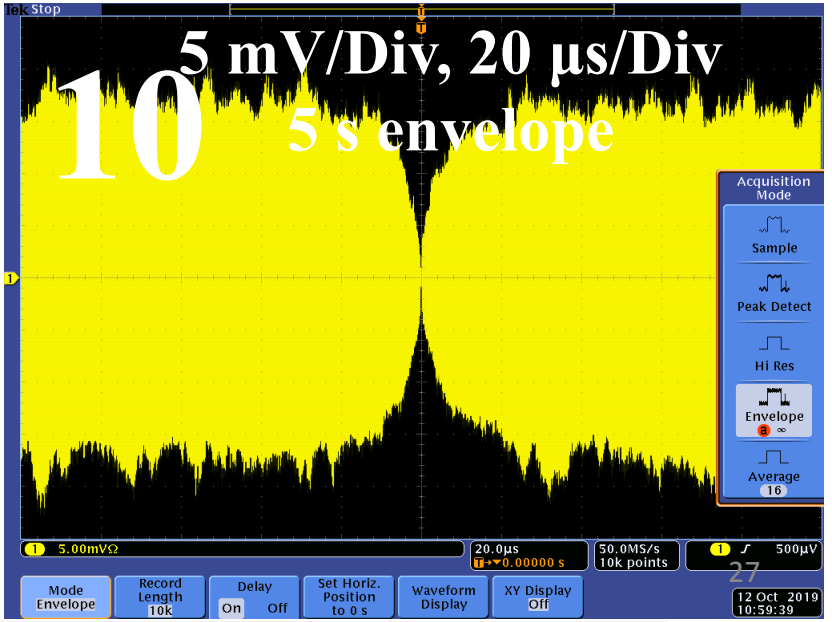

8
5 mV/Div, 20 µs/Div
5 s envelope
Acquisition Mode
Sample
Peak Detect
Hi Res
Envelope
Average 16
5.00mVΩ
20.0µs
0.00000 s
50.0MS/s
10k points
300µV
Mode Envelope
Record Length 10k
Delay On Off
Set Horiz. Position to 0 s
Waveform Display
XY Display Off
12 Oct 2019
10:54:06

Channels 9-10

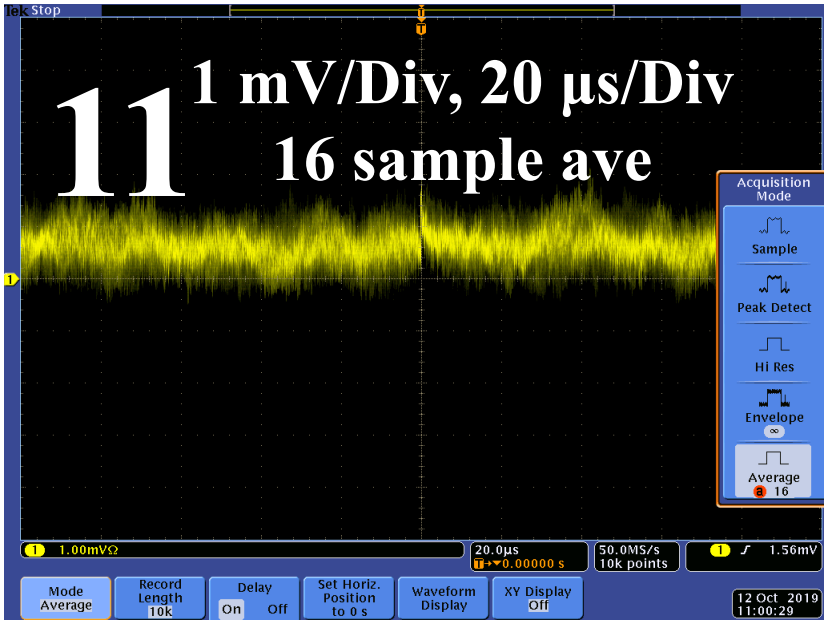


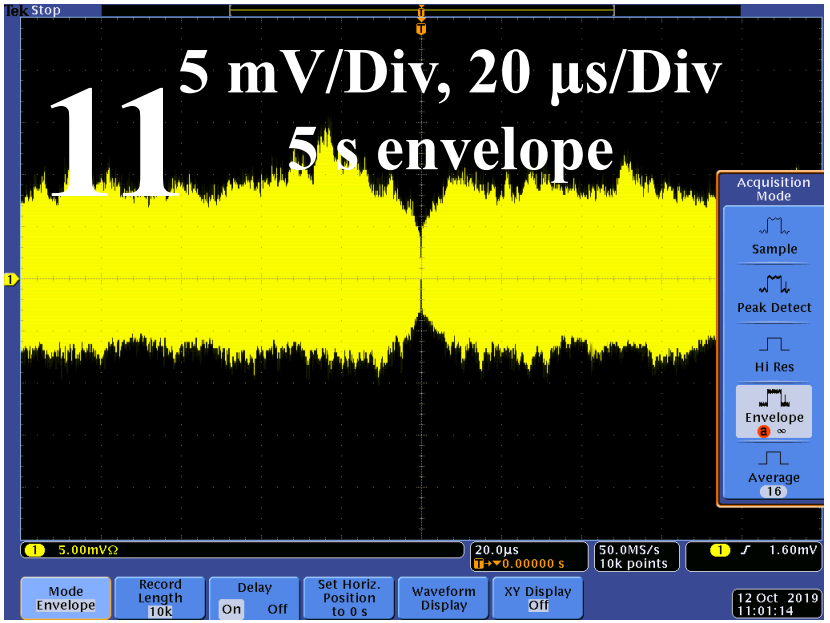


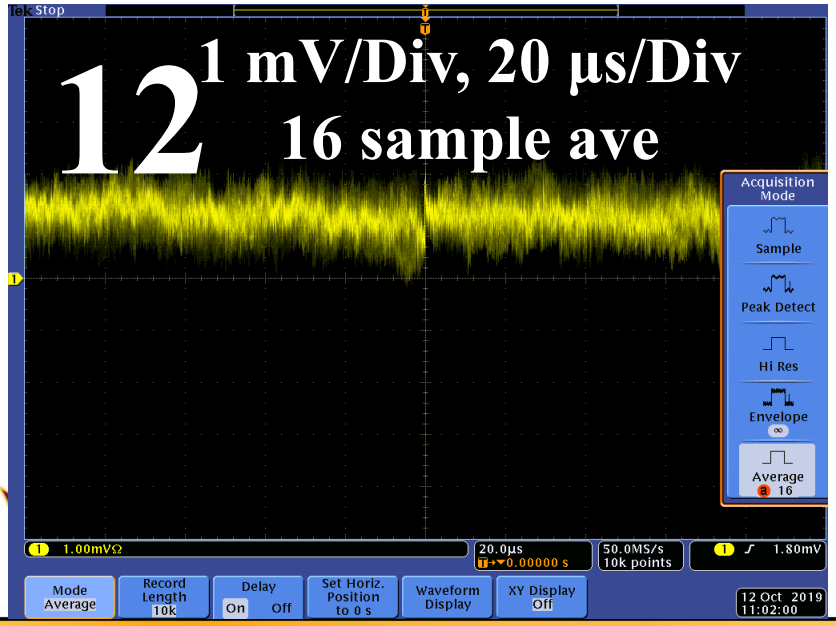


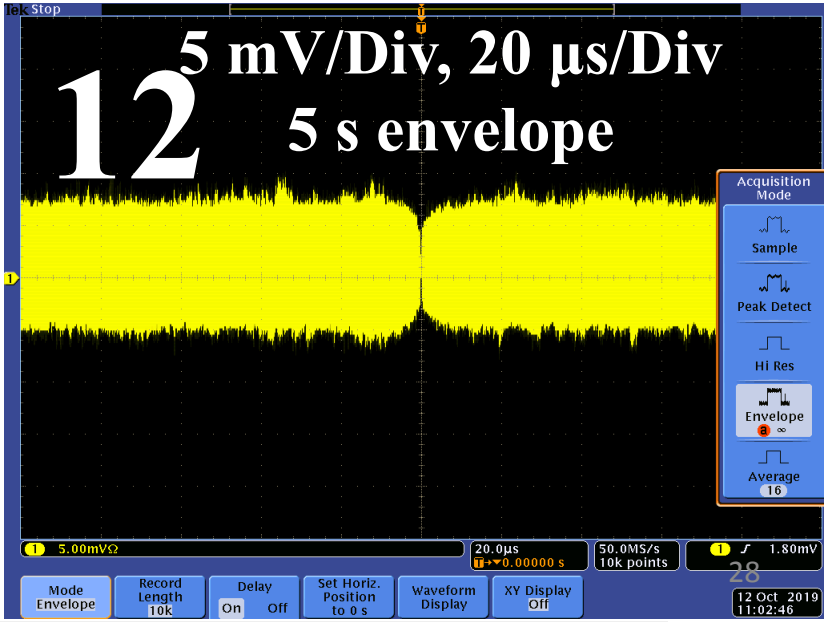


Channels 11-12

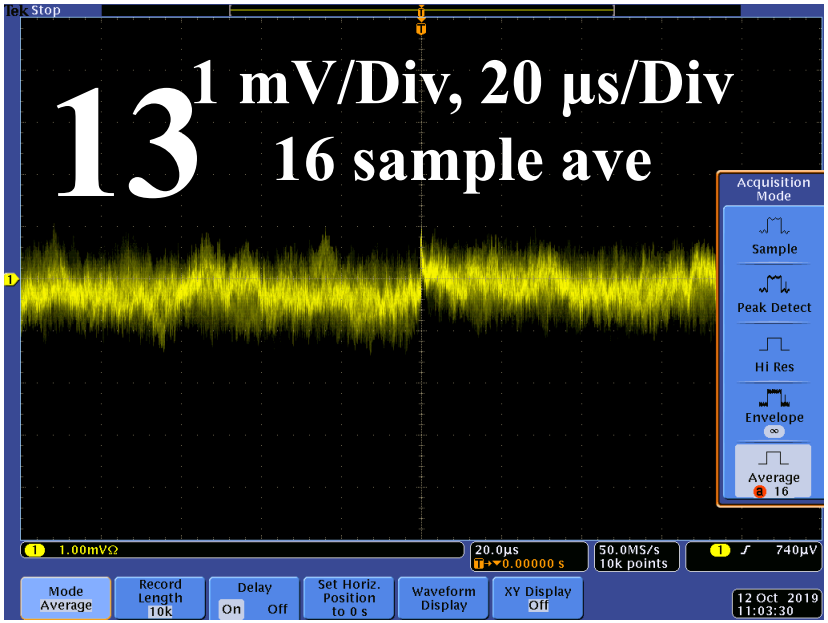


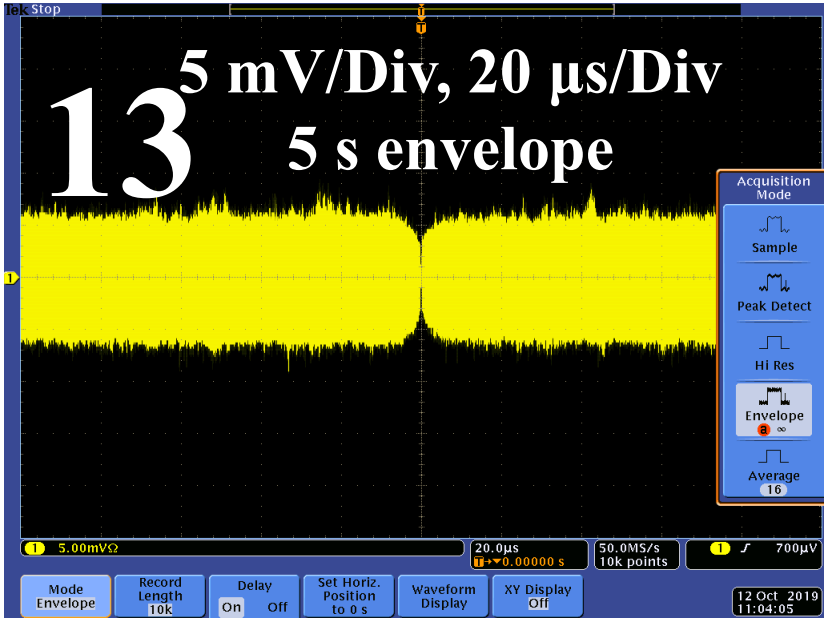


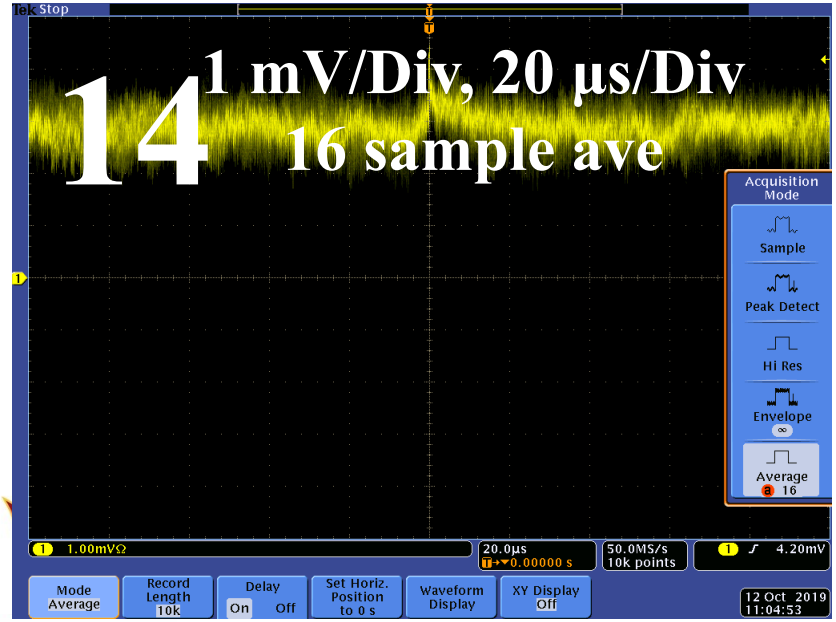


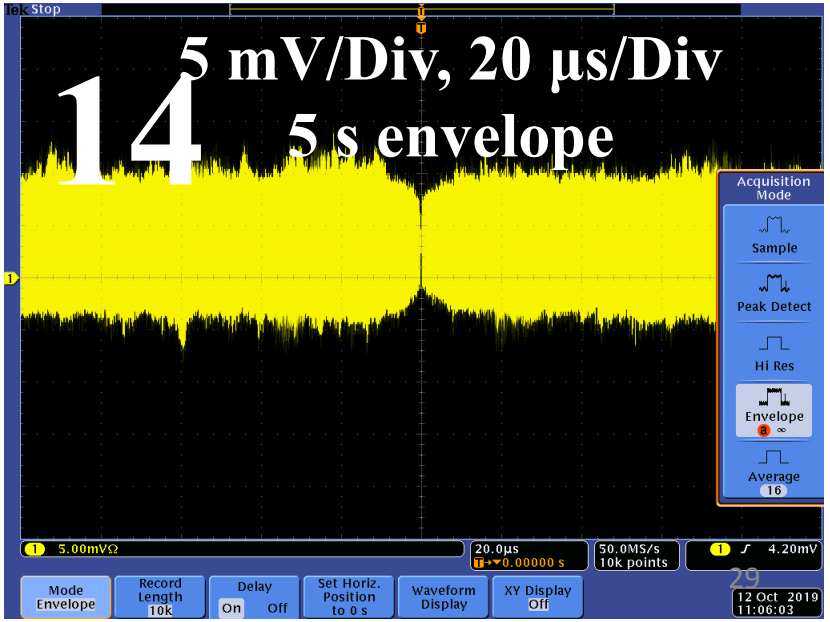


Channels 13-14

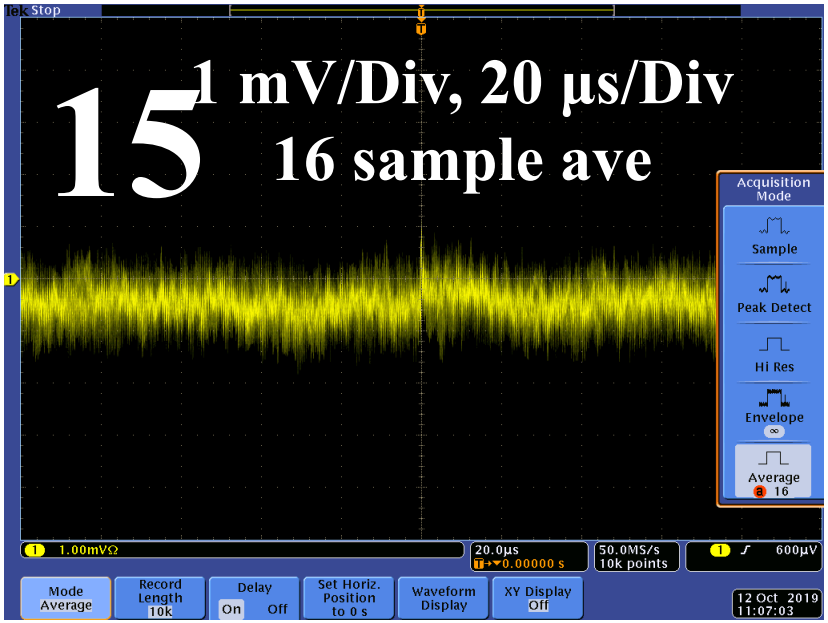


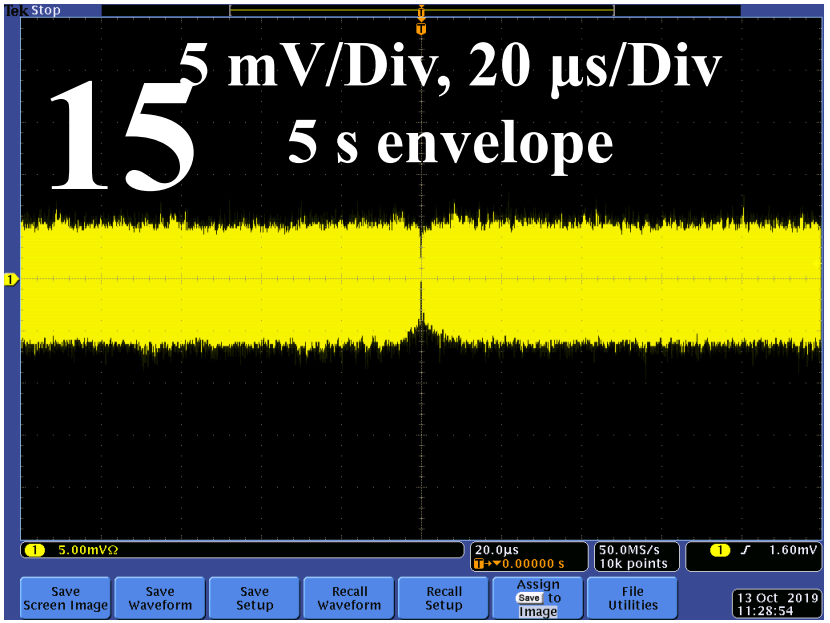


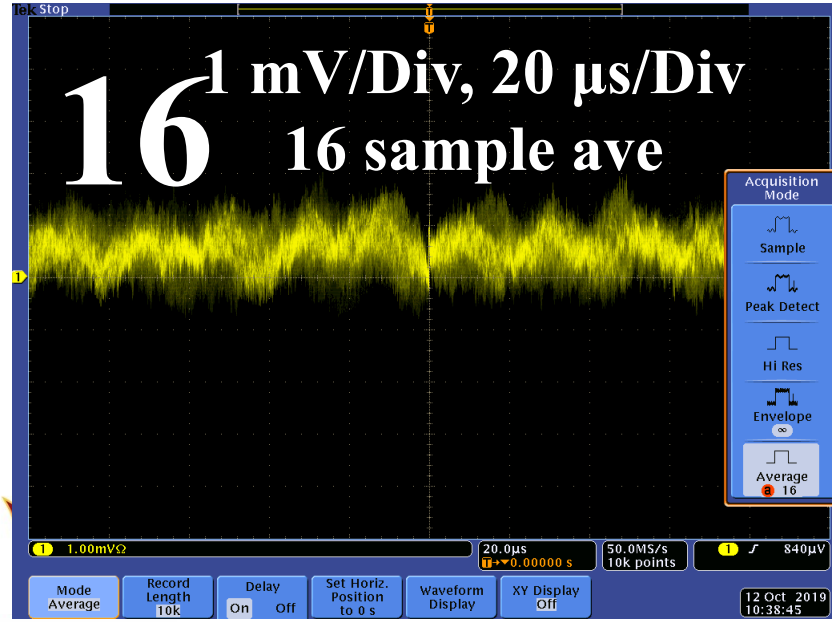


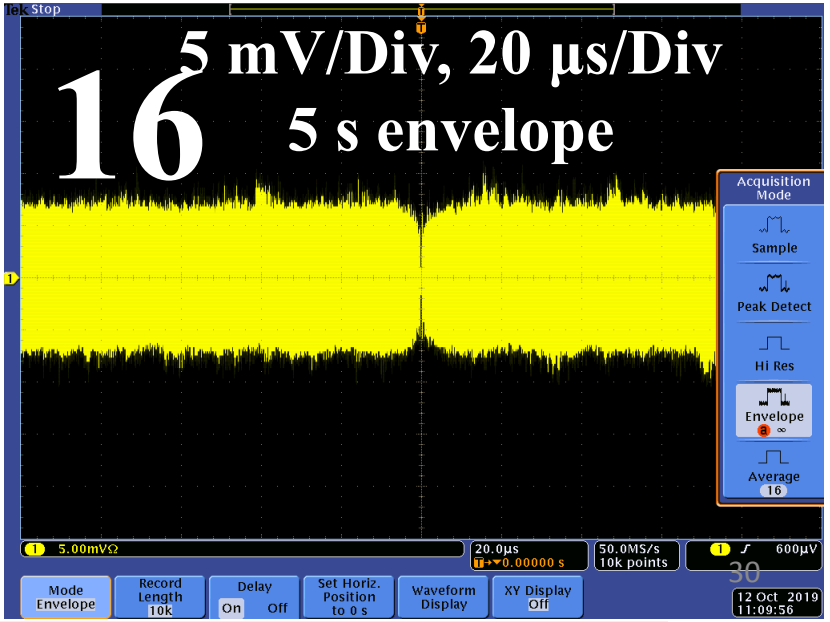


Channels 15-16

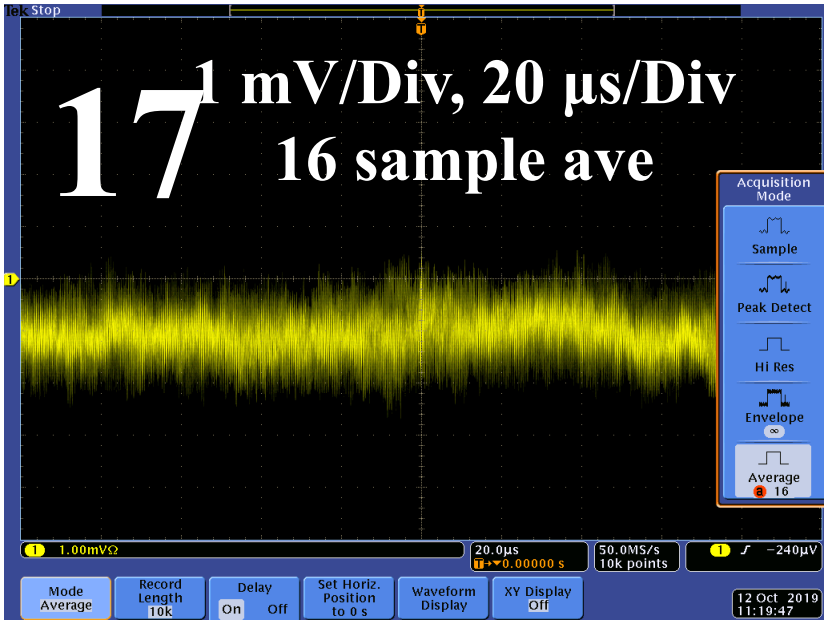


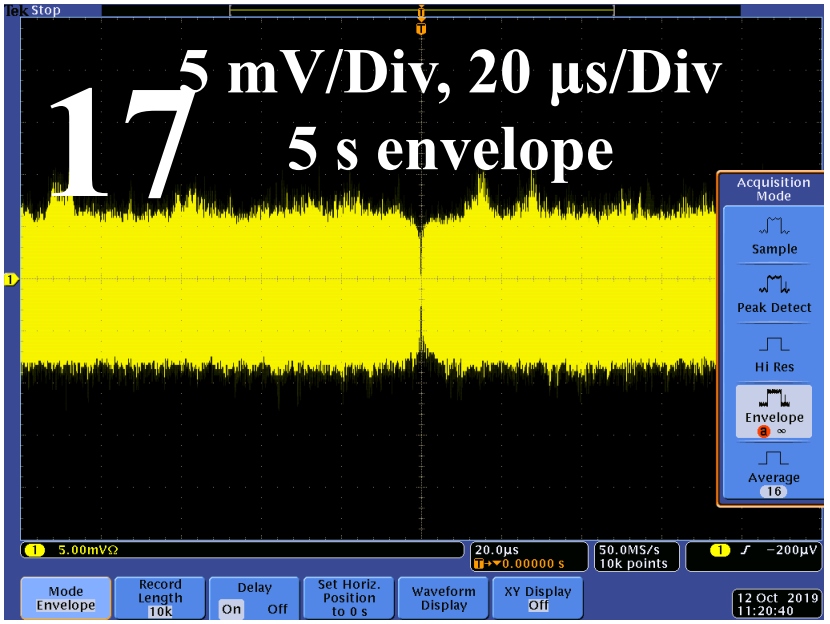


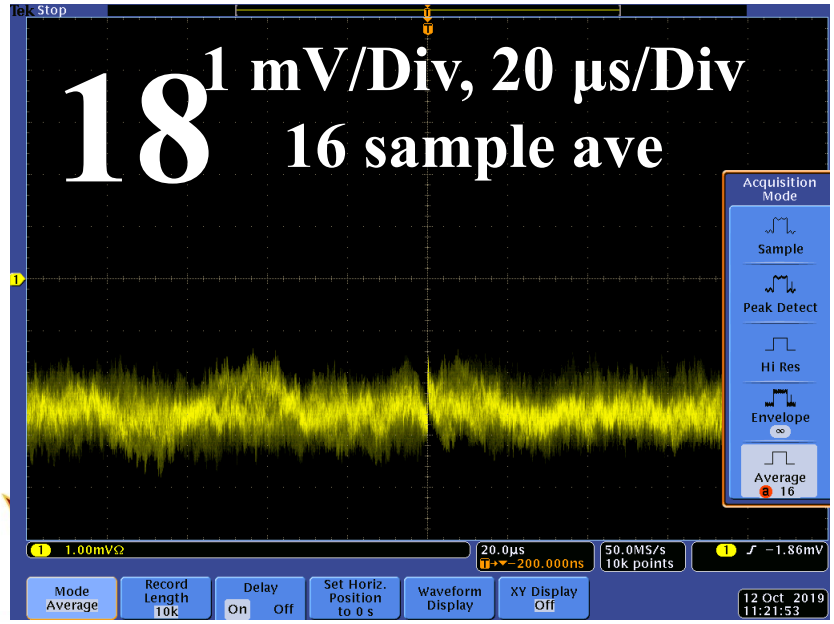


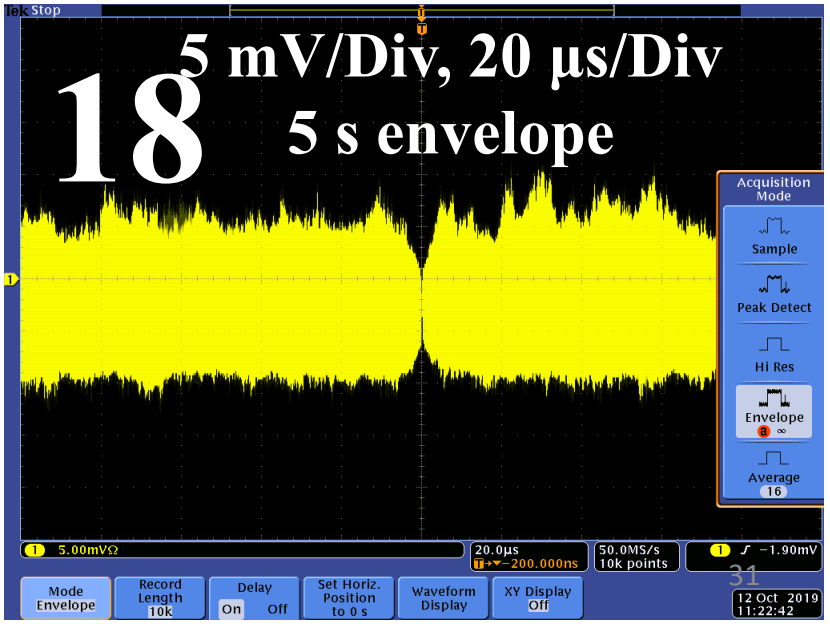


Channels 17-18

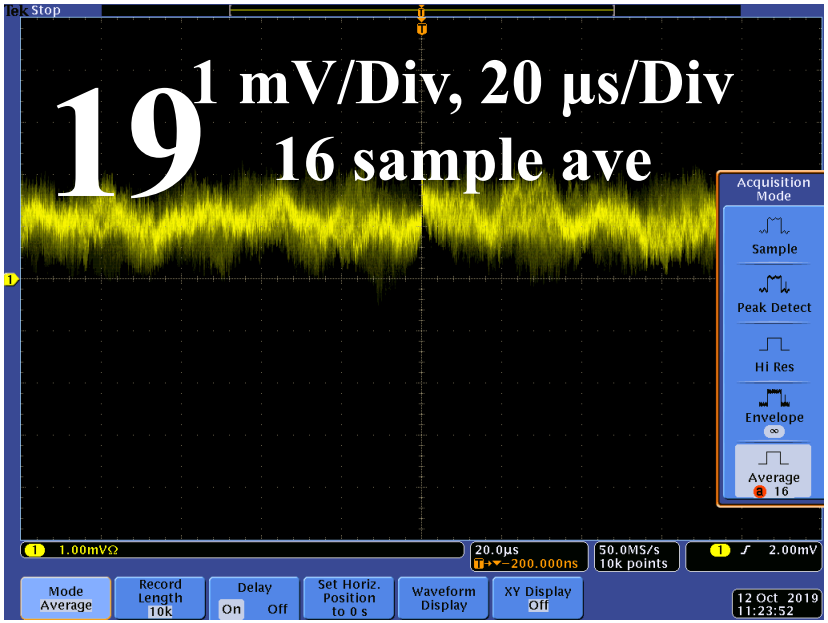


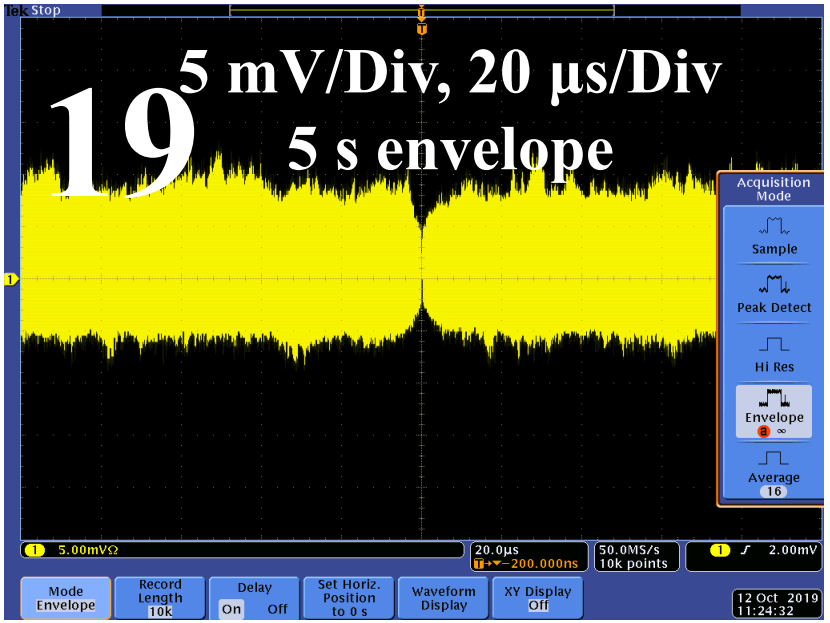


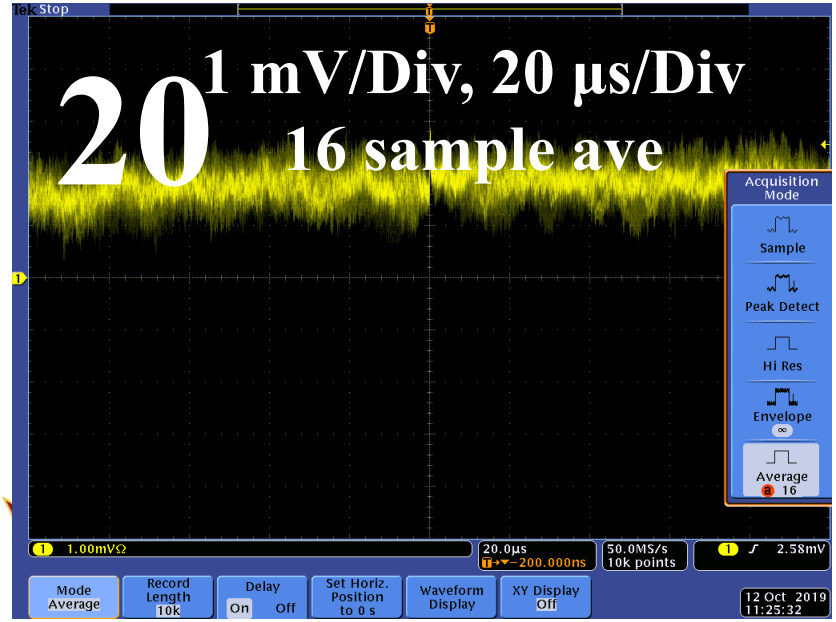


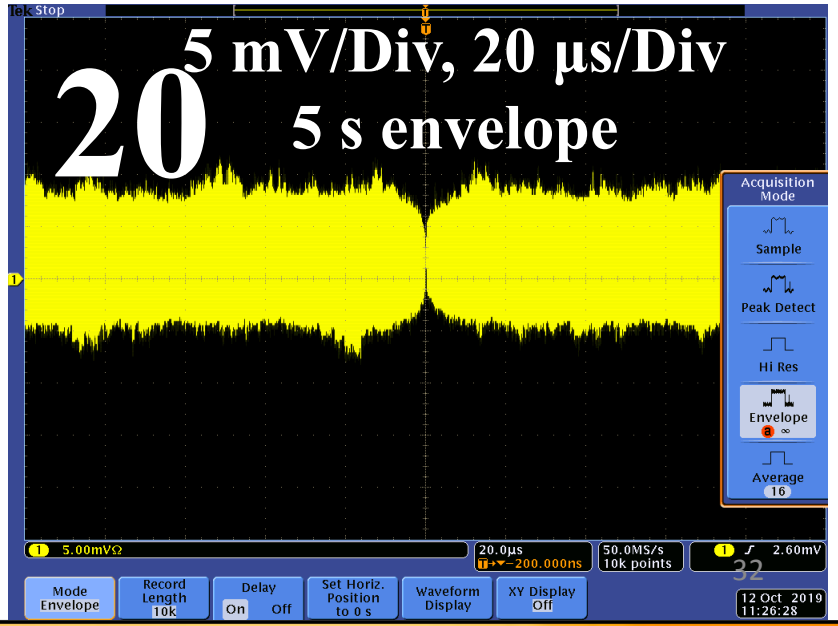


Channels 19-20

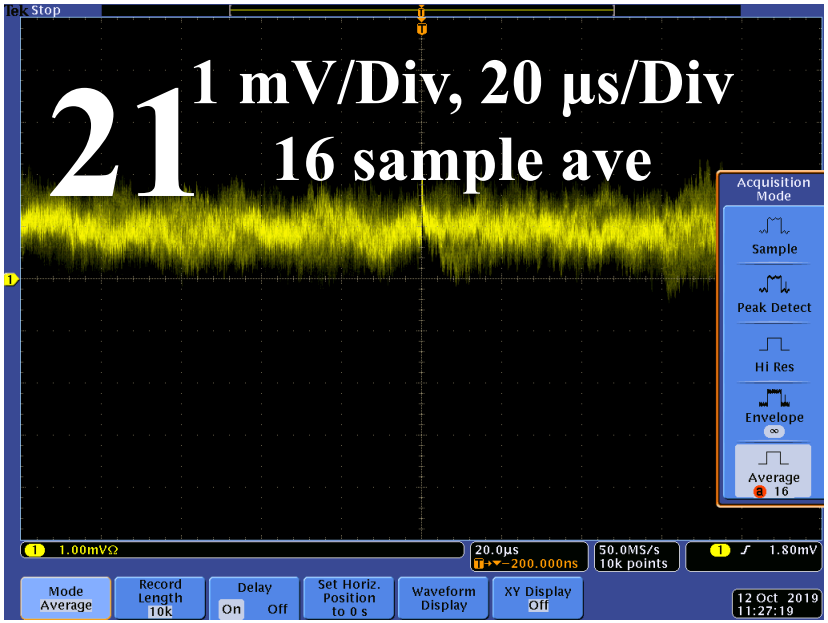


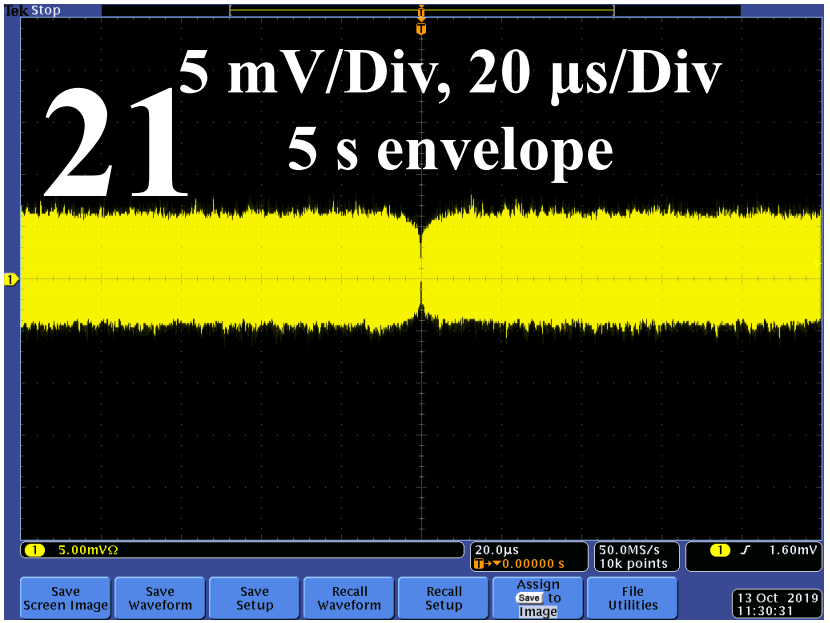


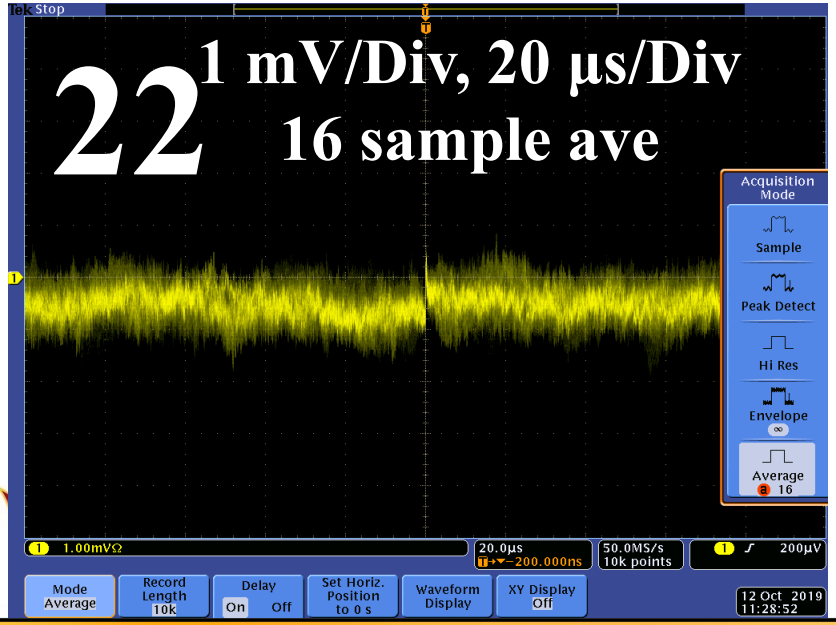


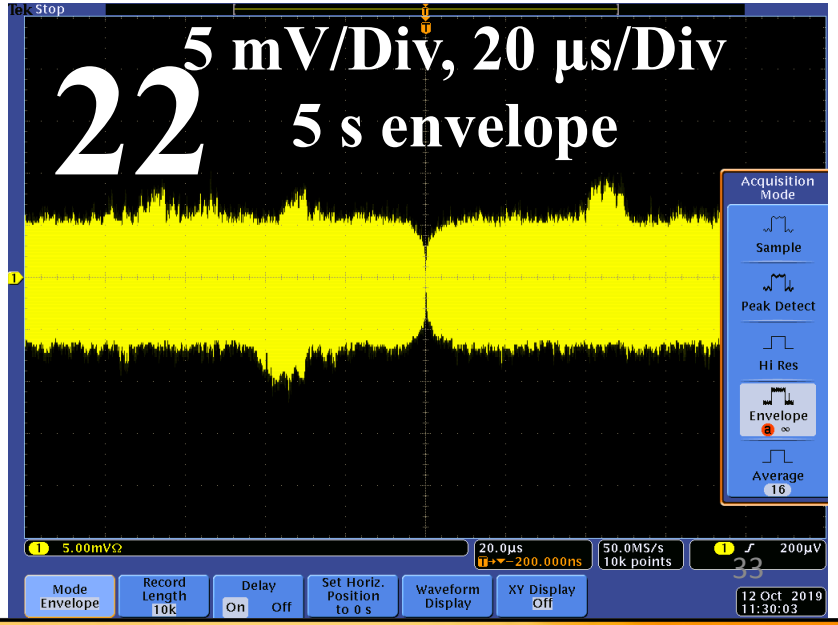


Channels 21-22

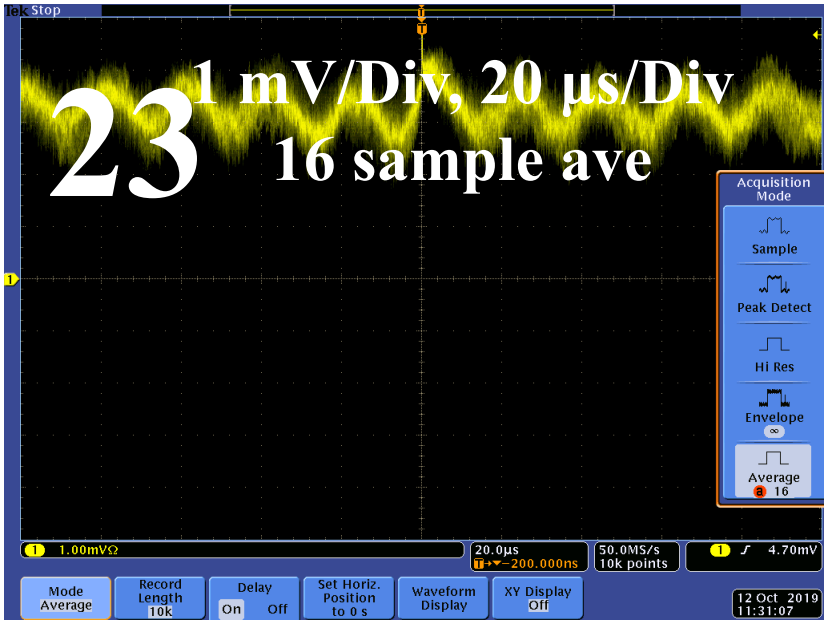


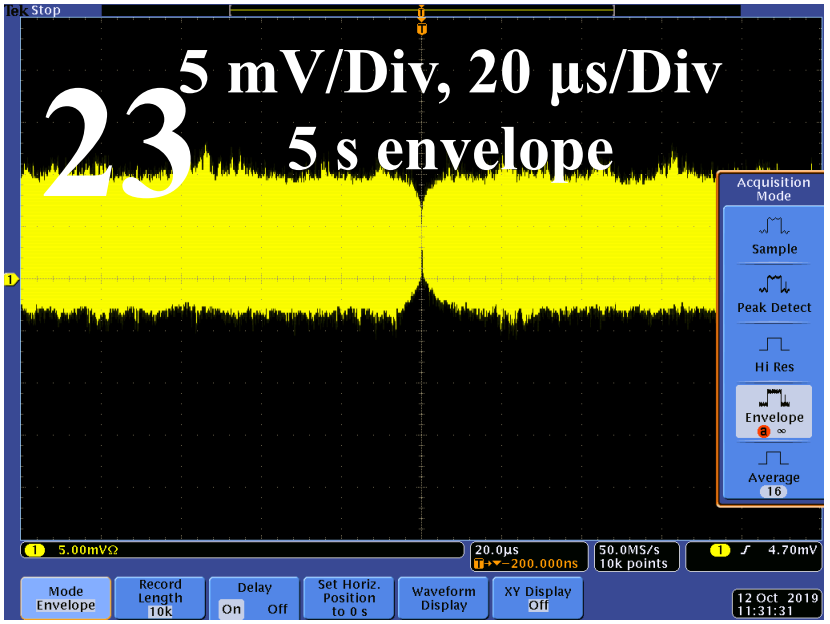


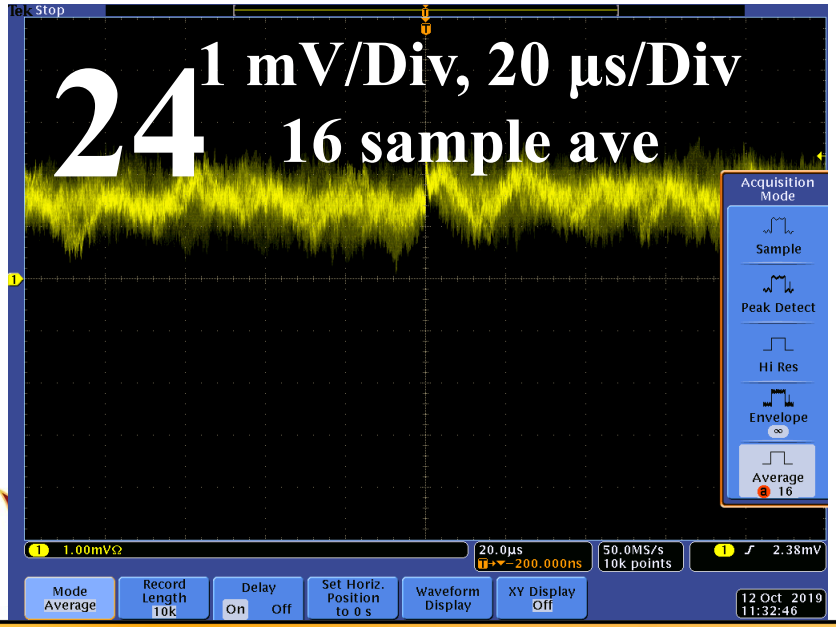


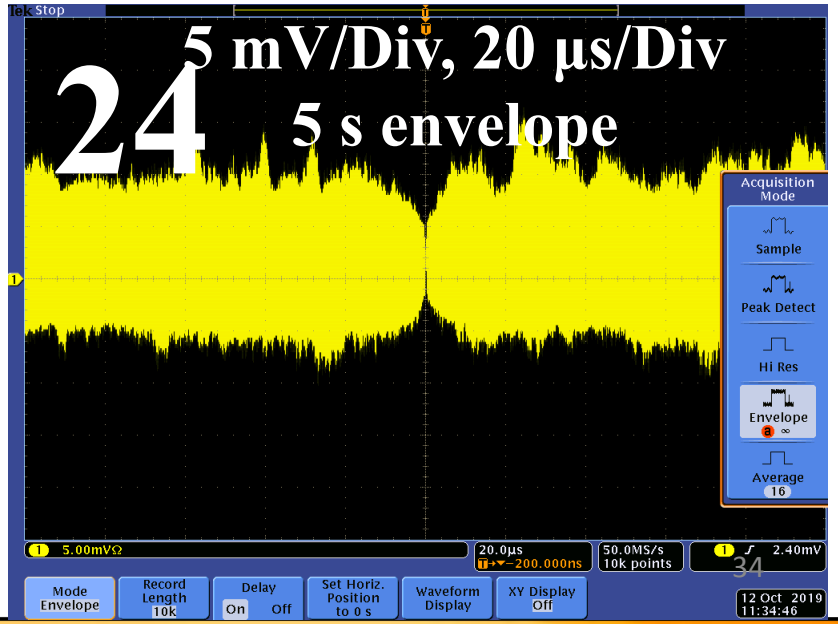


Channels 23-24

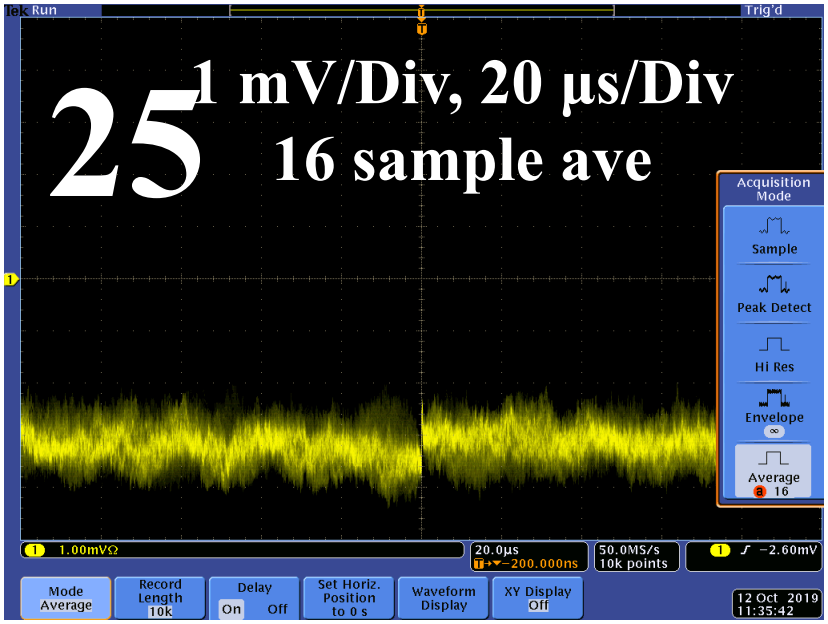


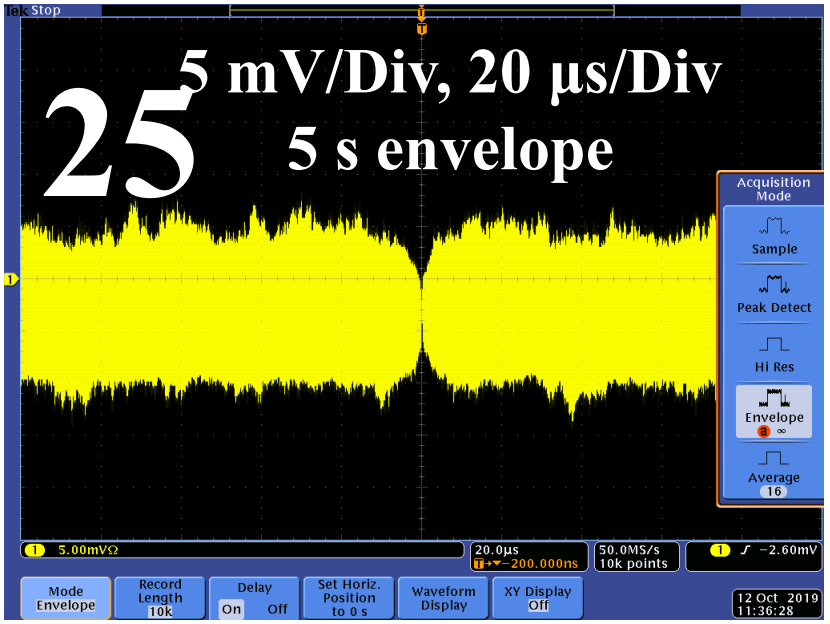


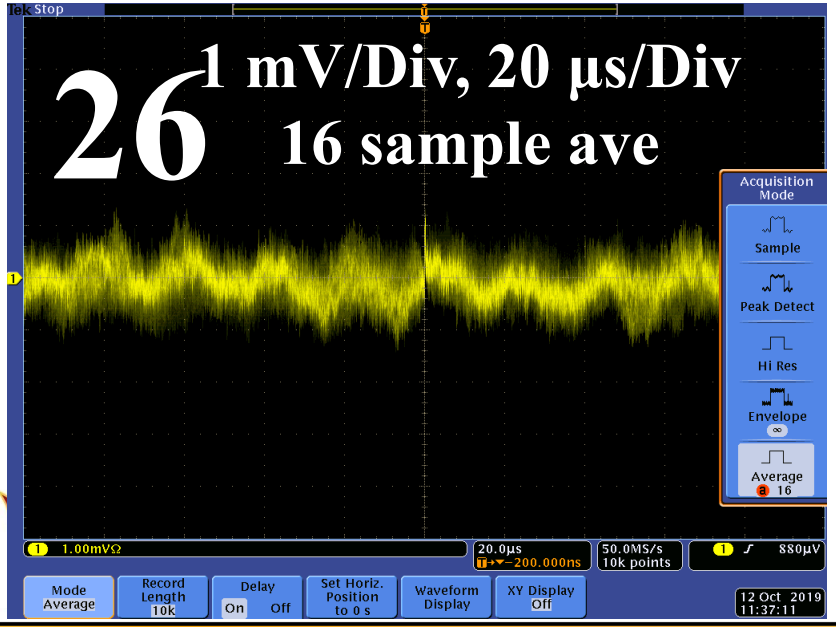


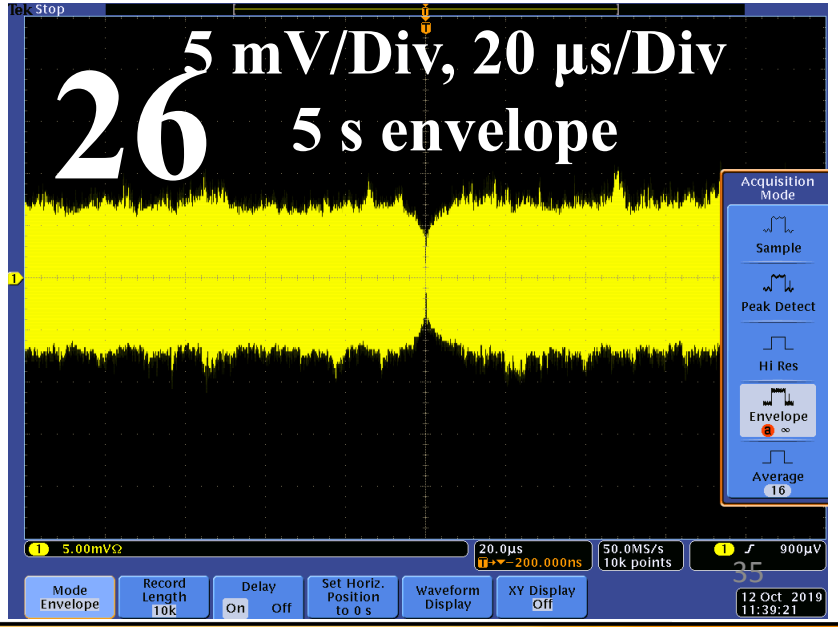


Channels 25-26

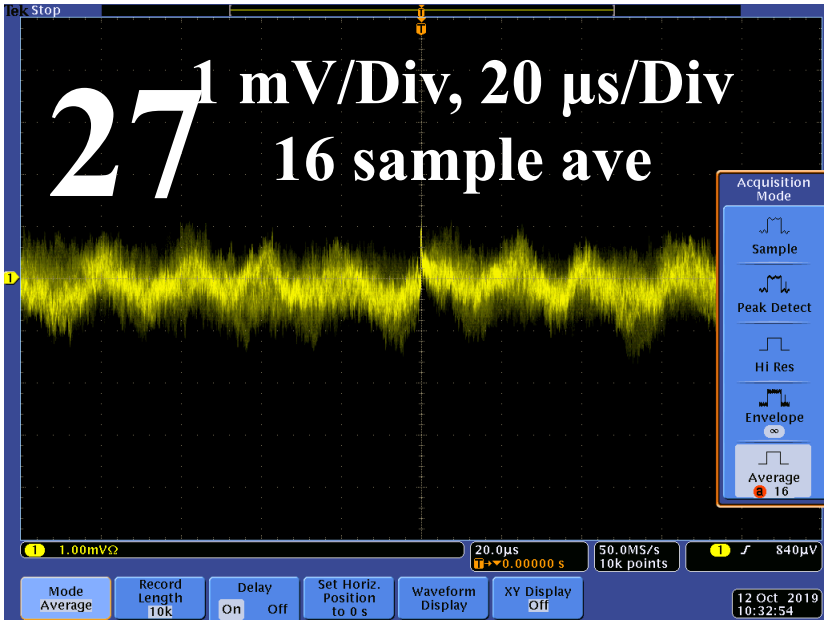


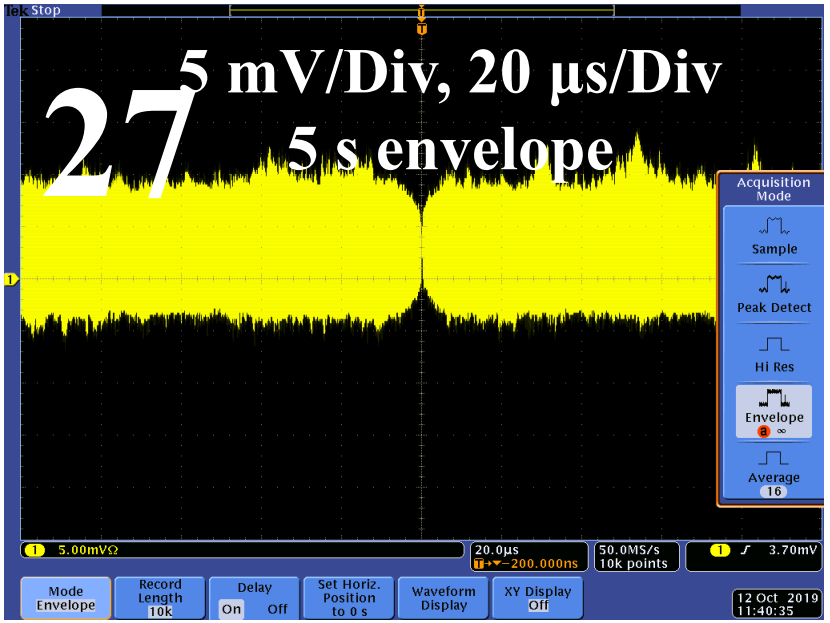


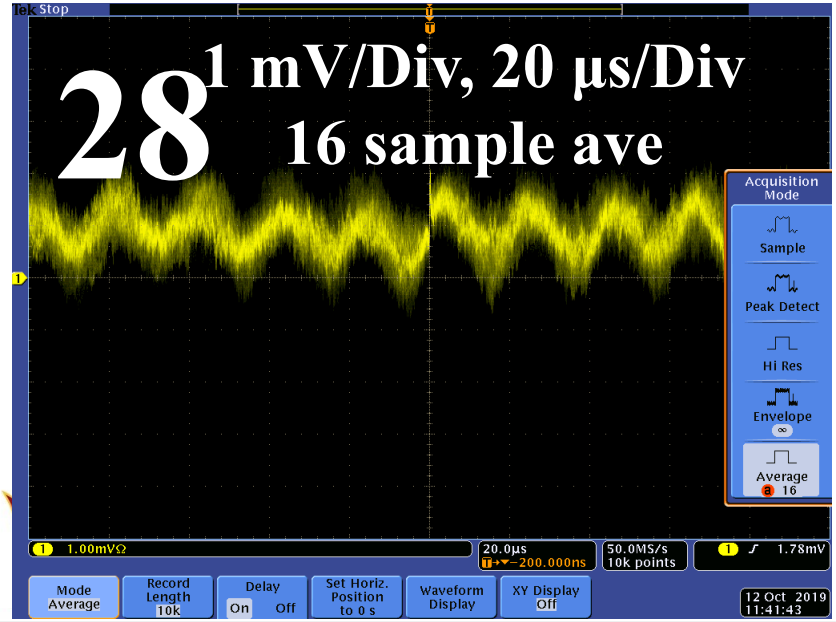


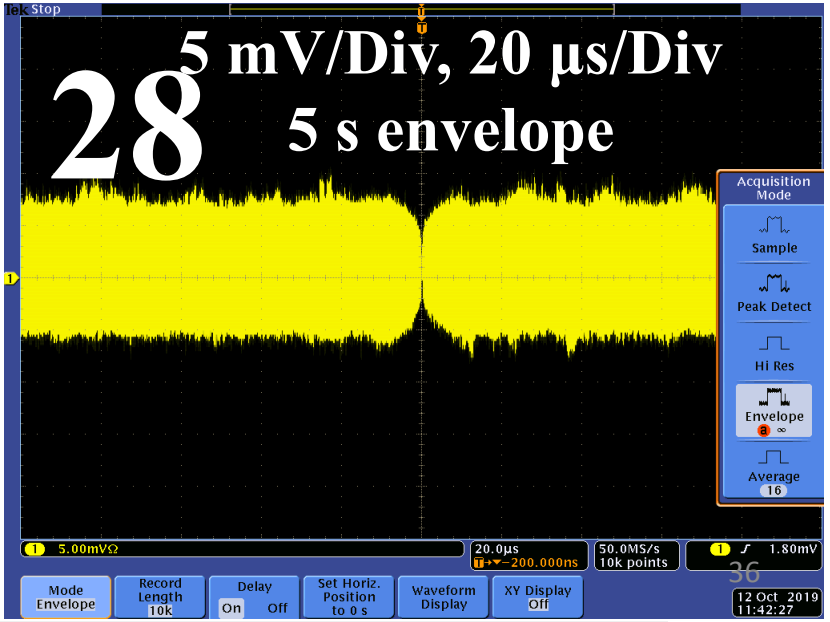


Channels 27-28

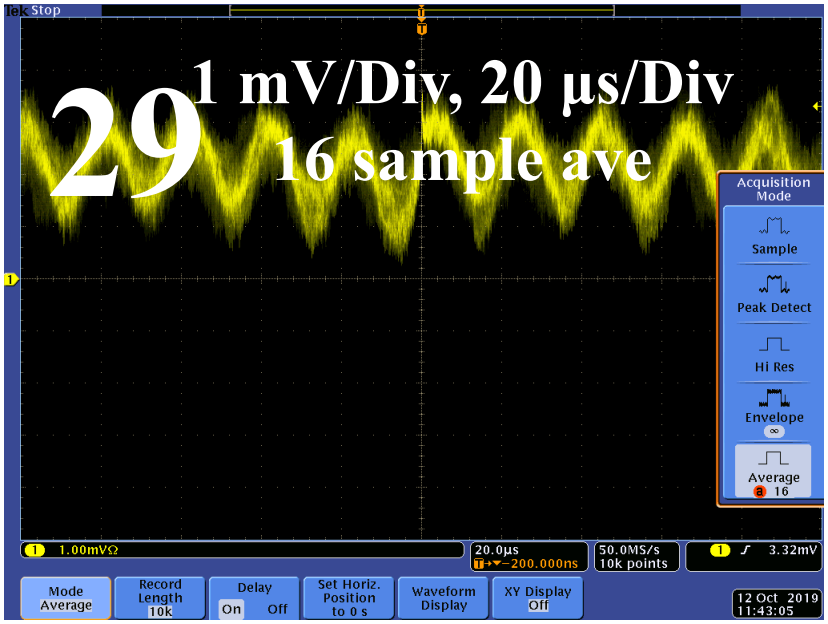


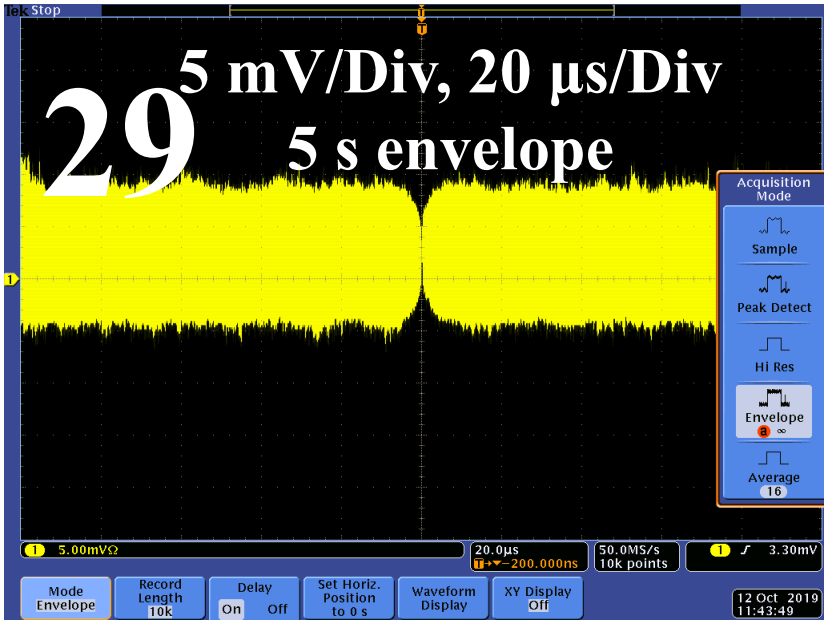


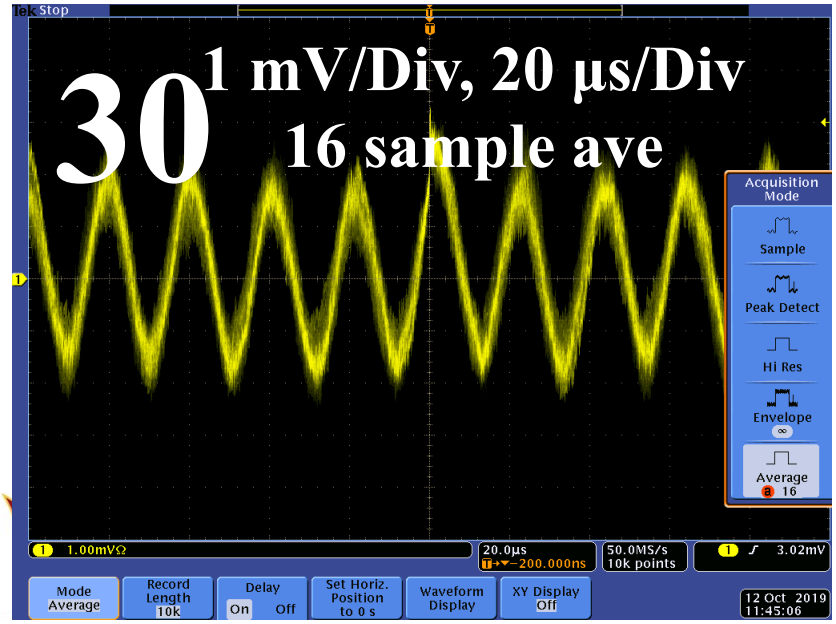


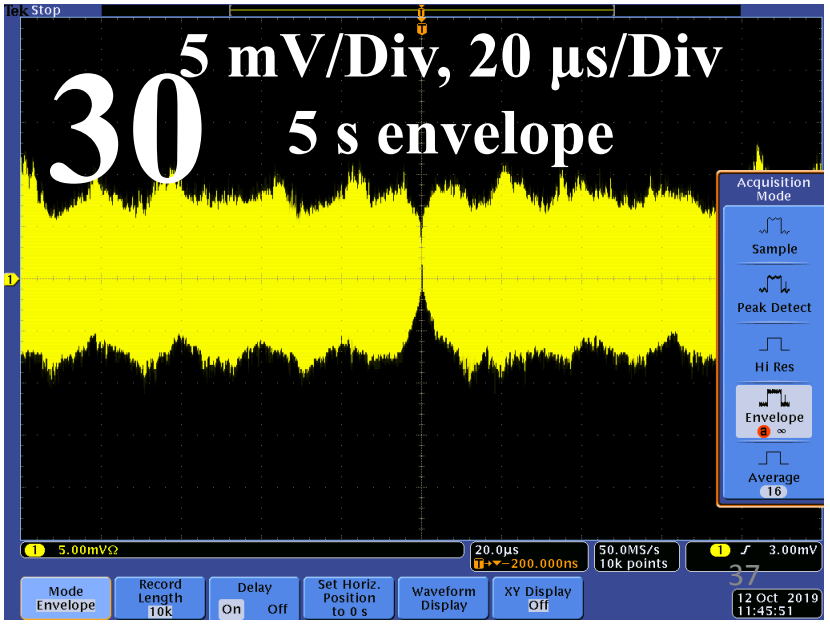


Channels 29-30

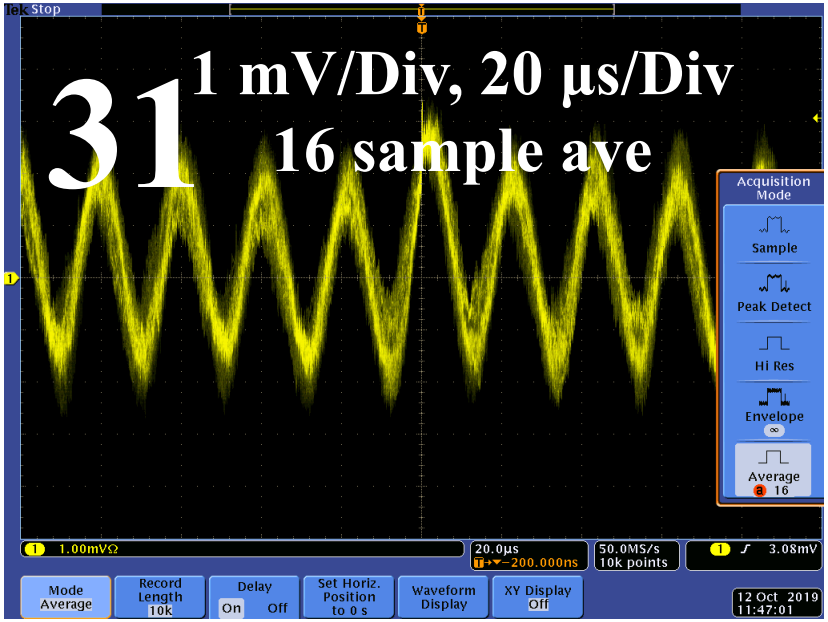


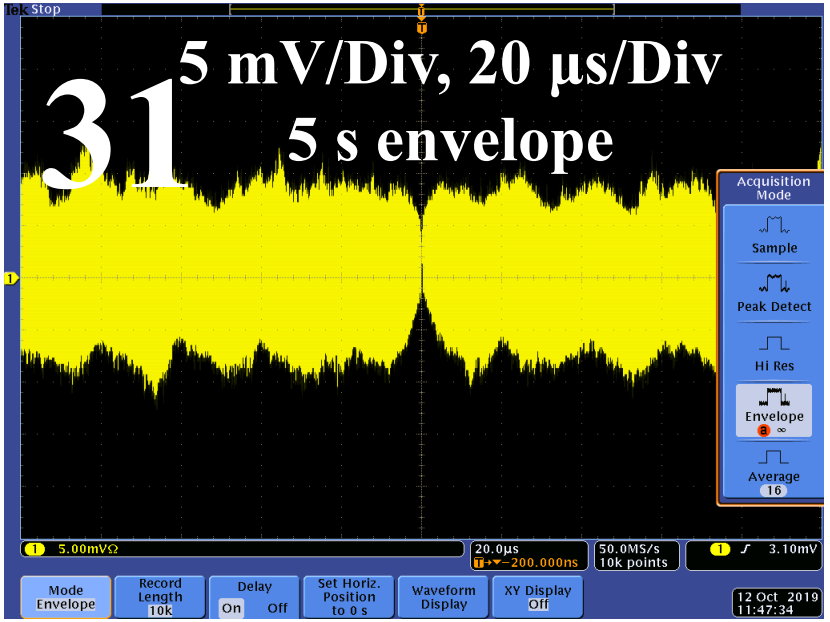


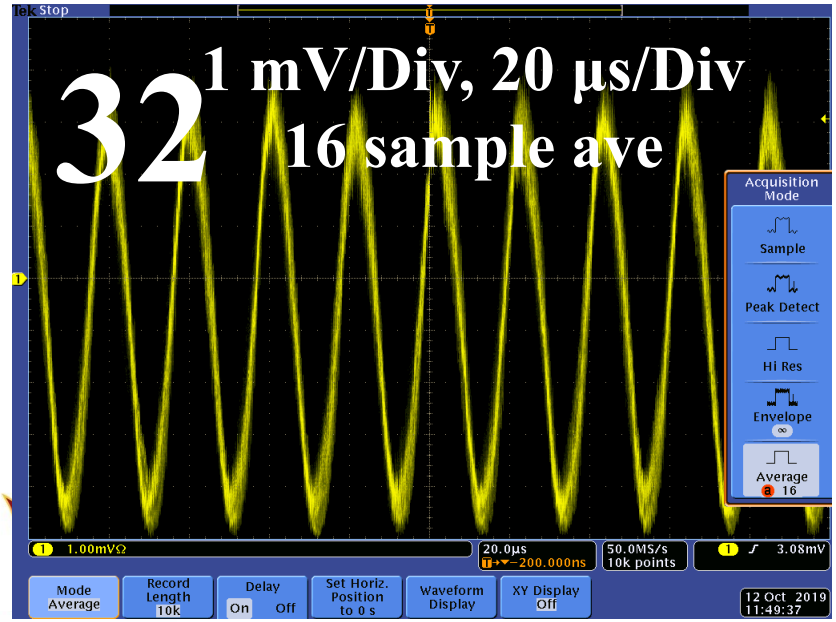


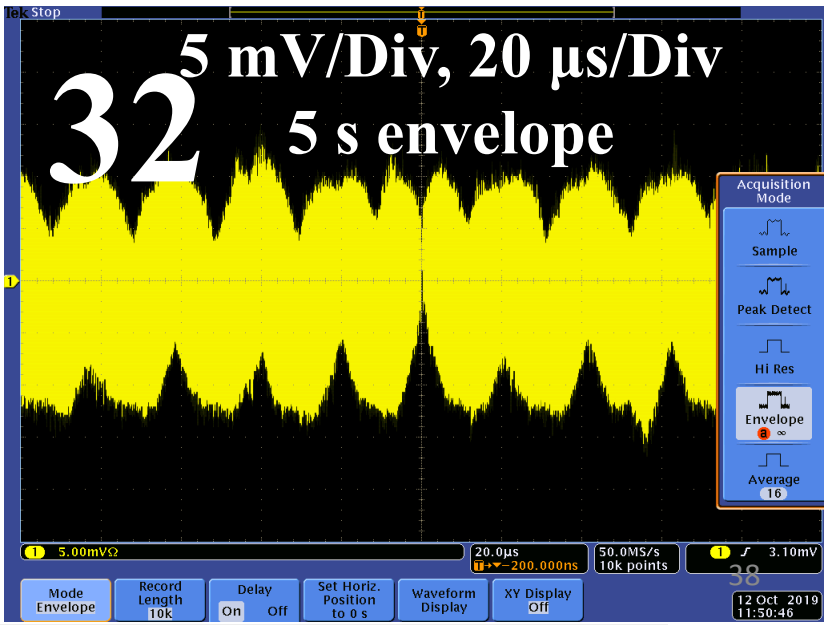


Channels 31-32









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